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Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1917

Somerville, W.T. C.
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ANNUAL REPORT

OF THE

WATER COMMISSIONER

Compliments of

FRANK E. MERRILL

Water Commissioner

SOMERVILLE PRESS PRINT
1918

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SOMERVILLE WATER WORKS.

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS.

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House in Boston.

Greatest extent of the City north and south about 4.2 miles.

Greatest extent of the City east and west about 2.1 miles.

Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet.
Highest building elevation in the city 145 feet.

Area of city, including land and water, about 4.22 square miles.
Land, 2,461.50 acres; water and marsh, 238.50 acres.

Population 1915, census, 86,854.

Present population, estimated, 90,000.

Entire population on line of pipe and supplied with water.

Water works owned by City of Somerville.
Construction commenced in 1868.
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds.
High service 45 to 100 pounds.

Mayor.

HON. ZEBEDEE E. CLIFF.

Water Commissioner.

FRANK E. MERRILL.

Office of the Water Department.

Room 10, City Hall.

Department Buildings and Yard.

Cedar street, near Broadway.

REPORT OF THE WATER COMMISSIONER.

OFFICE OF THE WATER COMMISSIONER,
January, 1918.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1917, this being the forty-fourth annual report of the water department and my eighteenth as water commissioner:—

Revenue and Expenditures.

Water bills have been issued as follows:—

"Annual" water charges, amounting to	$47,204 25
"Additional" water charges, amounting to	2,059 39
"Metered" water charges, amounting to	215,773 92
	$265,037 56

	Annual and Additional.	Metered.	
Abatements and refunds on above charges	$1,736 87	$582 92	
			2,319 79
Income from sale of water			$262,717 77
Receipts from water service assessments		$3,494 53	
Receipts for labor and materials sold:— Miscellaneous accounts		3,542 59	
			$7,037 12
Total income of water works			$269,754 89

This amount was used as follows:—

For water works purposes:—

Water works maintenance	$52,410 85		
Water works extension	22,692 31		
Miscellaneous accounts	3,542 57		
		$78,645 73	
Interest on water loan bonds		640 00	
Maturing water loan bonds		5,000 00	
Metropolitan water works assessment		118,425 67	
Maintenance water works buildings		1,496 99	
			$204,208 39

For other municipal purposes:—

Surplus to general revenue account	$65,546 50	
		$65,546 50
		$269,754 89

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements.

WATER MAINTENANCE ACCOUNT.

	Dr.	Cr.
Amount appropriated by board of aldermen		$55,965 00
Refund		18 00
Department accounts		1,141 47
Materials furnished for extension of the water works		13,318 74
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$52,410 85	
Amount expended for materials used in extension of the water works	13,318 74	
Miscellaneous accounts	3,542 59	
Labor and materials furnished municipal departments	1,141 47	
Unexpended balance	29 56	
	$70,443 21	$70,443 21

WATER WORKS EXTENSION ACCOUNT.

	Dr.	Cr.
Amount appropriated by board of aldermen		$22,540 00
Department accounts		152 31
Labor and materials charged to Water Maintenance account	152 31	
Amount expended for labor and materials used in extension of the water works	$22,526 30	
Unexpended balance	13 70	
	$22,692 31	$22,692 31

Cost of Water Works.

The total cost of the water works on December 31, 1916, as represented by the expenditures from appropriations for water works extension was	$1,038,662 29
Expended during the year 1917, on extension account	22,526 30
Total expenditures, December 31, 1917	$1,061,188 59

Water Debt.

Water loan bonds have been issued on funded debt account to the amount of $1,017,000; this has been reduced by $1,106,000, leaving the water debt on December 31, 1917, $11,000.

The outstanding bonds mature as follows:—

Year.	Amount.
1918	$5,000
1919	4,000
1920	2,000

Water Works Income from 1898 and its Distribution.

The water income and its distribution from 1898 to 1917, inclusive, is shown in the following table:—

Total water income, years 1898 to 1917, inclusive .		$4,619,711 60
Distribution:—		

Water Works Account.

Water Works Construction, Renewal, Maintenance and Operation .	$1,157,910 96	
Water bonds	263,000 00	
Interest	85,815 00	
Metropolitan Water Assessments .	1,762,852 71	
Maintenance Water Works buildings	2,843 05	
		$3,272,421 72

Other Municipal Accounts.

Various municipal departments through specific appropriations and general revenue account		$1,347,289 88
		$4,619,711 60

Water Distribution System — Construction.

STREET MAINS.

Approximate number of feet of street mains in the city, January 1, 1917, (including hydrant branches and blow-offs)		536,544
Feet of street mains laid in 1917 . .	5,808	
Feet of hydrant branches laid in 1917 . .	92	
Feet of blow-off branches laid in 1917 . .	34	
Feet of car-sprinkler connections laid in 1917,	205	
Total feet of pipe laid	6,139	
Feet of street mains removed and replaced, .	2,053	
Net increase in feet of pipe		4,086
Total approximate feet of pipe in the city . . .		540,630
Total pipe mileage, approximately		102.39

The sizes and lengths of pipe laid and removed are as follows:—

Size.	Feet Laid.	Feet Removed.	Size.	Feet Laid.	Feet Removed.
1"	0	101	8"	1,096	30
1½"	0	350	10"	268	0
2"	575	261	12"	2,657	0
4"	234	225			
6"	820	1,086	20"	489	0

The street mains constructed and replaced during the year are as follows:—

	Size of Pipe.	Feet Laid.	Feet Re-moved.	Size Re-moved.
Bailey street; new construction............	8"	24		
Bellevue terrace, reconstruction............	2"	88	101	1"
	4"	13		
Broadway; new construction....................	2"	149		
Carter terrace, new construction............	6"	169		
College Hill road; new construction........	6"	19		
Columbus avenue; new construction....	6"	12		
Conwell avenue; new construction........	12"	22		
Conwell avenue; reconstruction............	10"	4	4	6"
Cummings street; new construction........	8"	535		
Day street (H. S.); new construction....	8"	87		
Fairfax street; new construction............	8"	9		
Gordon street; new construction............	12"	1,257		
High street; new construction................	12"	70		
Middlesex avenue; new construction....	20"	489		
Morrison place; reconstruction................	2"	186	186	1½"
Mountain avenue; reconstruction........	6"	261	261	2"
North street; new construction............	6"	237		
	12"	202		
North street; reconstruction....................	12"	1,082	1,082	6"
Porter avenue; reconstruction................	2"	152	164	1½"
	6"	12		
Powder House blvd., new construction	12"	24		
Rose street; new construction................	8"	432		
Sterling street; new construction........	8"	9		

Walnut street; reconstruction	10"	255	225	4"
	10"	9	30	8"
Woods avenue; new construction	10"	9		
Hydrant and car-sprinkler branches and blow-off pipes,		331		
Total		6,139	2,053	

Hydrants, Gates, Etc.

Number of fire hydrants in city January 1, 1917,		1,160	
Number set during the year	24		
Number removed during the year	13		
Net increase in number of hydrants		11	
Total number of public fire hydrants			1,171
Number of private fire hydrants, January 1, 1917		64	
Number set by private companies during the year		0	
Total number of private fire hydrants receiving their supply from the city mains			64
Number of gates in city, January 1, 1917		1,733	
Number set during the year for new streets	15		
Number of section gates set	7		
Number set on hydrant branches	33		
Number set on blow-off branches	4		
Number set on car-sprinkler connections	16		
		75	
Number of street gates removed	6		
Number of section gates removed	1		
		7	
Net increase in number of gates		68	
Total number of gates in city			1,801
Number of check-valves in city January 1, 1917		8	
Number of blow-offs in city January 1, 1917		173	
Number added during the year		1	
Total number of blow-offs			174
Number of waterposts in city January 1, 1917		79	
Number set or removed during the year		0	
Total number of waterposts			79
Number of drinking fountains in city, January 1, 1917		9	
Number set or removed during the year		0	
Total number of drinking fountains in city			9
Number of car-sprinkler connections in city January 1, 1917		0	
Number installed during the year		17	
Total number of car-sprinkler connections in city			17

Water Services

Number of services in city January 1, 1917, (approximately)		13,420	
Number laid during the year	118		
Number permanently discontinued	29		
Net increase in services		89	
Total number of water services in city			13,509
Amount received for services laid in 1917			$3,494.53
Number feet service pipe in city January 1, 1917			463,682
Number feet laid during the year	4,206		
Number feet discontinued	1,321		
Net increase in feet of service pipe			2,885
Total feet service pipe in city (approximately)			466,567
Total service mileage (approximately)			88.36

Size, number and length of service pipes laid in 1917:—

⅝"	¾"	1"	1½"	6"	1¼"	1½"
12—541'	87—2933'	16—520'	1—18'	2—72'	1—76'	1—26'

Number of fire services installed during 1917 2

Locations	No.	Size
Sprague-Hathaway Co. (High-Service)	1	6"
Sprague-Hathaway Co. (Low-Service)	1	6"

Blow-offs

Number of blow-offs in city January 1, 1917	174	
Number added during the year	3	
Total number in city		177

Locations of Blow-Offs Installed in 1917

Middlesex Avenue, near Cummings St	6"
North St., on dead end, at Medford line	4"
Washington St., foot of Columbus Ave	4"
Gordon St., at Alewife Brook Parkway (partly completed)	

Water Meters

Number of water meters in city, January 1, 1917		9,758
Number installed during the year, new	317	
Number reset	174	
	491	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	225	
Net increase in number of operating meters		226
Number of motor registers in service		4
Total number of meters and registers		10,028
Per cent. of all services metered		74.23

The kinds and sizes of all meters now installed are shown in the following table:—

Operating Meters December 31, 1917.

KIND.	SIZE.								Total.
	⅝″	¾″	1″	1½″	2″	3″	4″	6″	
Nash	176								176
Empire	4								4
Crown	5	3	3	2	2	2			17
Gem							1		1
Hersey			5	1	1	2			9
Hersey Disc	256	22	9	1	4				292
Torent								1	1
Trident	503	41	24	6	6				580
Trident Crest					2	2	3		7
Trident Comp.					7	2	2		11
Union	15	13	7	1	3				39
Union Special		13	2	2					17
Columbia	55								55
King	655								655
Lambert	4,152	150	27	1					4,330
Worthington Disc	3,762	32	6	4					3,804
Worthington Turbine							1	1	2
Keystone	24								24
Totals	9,607	274	83	18	25	8	7	2	10,024
Motor and elevator registers									4
									10,028

The meters installed in 1917 were classed as follows:—

Applications of property owners	83
New services	154
General installation	80
Reset	174
Total	491

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	100
Services permanently discontinued	8
Replaced by other meters	117
Total	225

Under the provisions of the Metropolitan Water Act it is necessary that there be installed in this city at least 411 meters each year on services previously unmetered, and meters on all new services when they go into regular use.

In past years an excess of meter installation has been attained, amounting to 872 in number. Because of this, and taking into consideration the present high cost of material and the drafting into government service of much of our skilled labor, the approval of the Metropolitan Water and Sewerage

Board was obtained to a decreased installation of meters for the year 1917. Meters were installed on all new services and 163 were set on old services, reducing the regular quota for the year by 248, but still leaving an excess installation for the term of years since the act became effective amounting to 624 meters.

Meters installed yearly on old and new services under the State Compulsory Meterage law:—

Year	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	755	344	344	147
1909	637	226	570	201
1910	501	90	660	169
1911	528	117	777	200
1912	423	12	789	236
1913	432	21	810	255
1914	422	11	821	231
1915	439	28	849	217
1916	434	23	872	203
1917	163	248 (less)	624	154

The following table shows the progress of meter installation of Somerville by years and the results therefrom in water consumption:

Year	Population	Number of Services	Number of Meters	Per Cent Metered		Per Capita Consumption
1897	58,000	9,601	....	....	(Est.)	88
1898	59,000	9,806	143	1.5	"	88
1899	61,000	10,053	226	2.25	"	88
1900	62,000	10,291	202	2	"	88
1901	64,000	10,520	224	2	"	88
1902	66,000	10,710	269	2.5	"	88
1903	68,000	10,854	647	6.	"	88
1904	69,000	11,059	1,272	11.5		89
1905	70,000	11,279	2,092	18.5		89
1906	71,000	11,489	2,829	24.5		89
1907	72,000	11,662	3,455	29.5		90
1908	74,000	11,817	4,333	36.5		89
1909	76,000	12,018	5,155	43		84
1910	78,000	12,149	5,817	48		80
1911	79,000	12,357	6,533	53		74
1912	80,000	12,596	7,171	57		79
1913	82,000	12,827	7,856	61		72
1914	85,000	13,034	8,499	65		73
1915	87,000	13,233	9,155	69		67
1916	90,000	13,420	9,763	72.75		69
1917	91,000	13,509	10,028	74.23		73

Summary of Pipes and Fixtures of the Water System December 31, 1917.

Feet of main pipe (approximately)	540,630
Feet of service pipe (approximately)	466,567
Service connections (approximately)	13,509
Public fire hydrants	1,171
Private fire hydrants	64
Gates	1,801
Check valves	8
Meters	10,024
Motor registers	4
Waterposts	79
Blow-offs	177
Drinking fountains and troughs	9

WATER DISTRIBUTION SYSTEM—MAINTENANCE.

Street Mains.

The 1″ and 1½″ service mains in Bellevue terrace, Morrison place and Porter avenue have been replaced with larger pipes on account of inadequacy of the supply through them. The old 2″ service main in Mountain avenue was replaced with a 6″ main on account of poor supply and the reconstruction of the street. The 4″ main in Walnut street between Highland avenue and Medford street was replaced with a 10″ main to improve the water circulation and in anticipation of the permanent paving of the street. The old 6″ main in North street between Conwell avenue and the dead end was replaced with 12″ pipe laid on the westerly side of the street and was connected with the new main continuing northerly to a dead end at the Medford city line. A new 12″ connection was made with this main at Conwell avenue and the old 6″ main from Conwell avenue northerly was removed from the ground.

All the service pipes formerly attached to the old 6″ main were transferred to the 12″ main. This work was done on account of the desire of the Metropolitan Water Board to eventually transfer this district from the high-service to the low-service system, and at this particular time on account of the proposed reconstruction of North street by the highway department.

Defects in the street mains have appeared in nine different places, the most serious being a cracked pipe in the 16″ line in Mansfield street, a settled pipe and pulled joint in the 12″ main over the B. & M. R. R. bridge in Medford street, and a blow-out in the 18″ main in Washington street near Franklin street. In the latter place, in the early morning of December 5, a section of the main of approximately three square feet in area broke out from the side without any apparent cause, but fortunately did but little damage aside from tearing up the paved street and flooding two cellars on a side street. The water pressure on the main at this point was about 65 pounds per square inch and the pipe had been laid about twenty-five years.

Hydrants.

All the fire hydrants have been inspected, repaired when necessary, and painted. A card index of all hydrants in the city has been prepared, showing the location, make, water pressure and other details.

Services.

The older service pipes are giving us the usual amount of trouble from corrosion and other causes and their care occupies a considerable portion of our time. On account of increasing cost of labor and materials the policy of replacing or examining all old services in streets undergoing reconstruction has, by agreement, been temporarily discontinued and only those known to be very old or suspected to be in defective condition have been overhauled. Where permanent paving has been laid, however, the services have generally been relaid.

LABOR.

The wages of common laborers were advanced by the mayor in June to $2.75 per 8-hour day, and of skilled laborers to $2.90 per day, but good labor has been difficult to obtain. Our skilled jobbing force has been largely depleted through calls of the men to Government service or to better paying positions, and this labor problem is proving a difficult one to overcome as men not only have first to be obtained but afterward must be trained in water-works requirements before they become of much value to the department.

WATER ASSESSMENTS AND CONSUMPTION.

The annual assessments paid by this city as its proportionate part of the cost and operation of the Metropolitan water works are given below:—

Year	Sinking Fund	Maintenance	Interest	Maturing Bonds	Total
1898........	No division	made			$14,250 19
1899........	" "	"			20,975 58
1900........	" "	"			28,689 24
1901........	$12,491 73	$12,033 79	$32,291 24		56,816 76
1902........	19,014 85	12,955 64	30,427 40		62,397 89
1903........	15,748 56	12,763 10	48,776 77		77,288 43
1904........	16,404 42	15,393 87	54,938 64		86,736 93
1905........	21,358 11	13,666 71	55,535 91		90,560 73
1906........	22,345 50	17,412 51	57,402 07		97,160 08
1907........	25,365 30	18,880 01	62,089 30		106,334 61
1908........	24,865 73	15,221 12	68,604 23		108,691 08
1909........	24,812 23	21,220 56	66,540 41		112,573 20
1910........	25,018 52	18,212 28	66,825 45		110,056 25
1911........	25,424 55	19,573 82	69,849 26	$246 66	115,094 29
1912........	24,469 82	16,111 70	68,205 16	445 46	109,232 14

1913........	24,930 94	20,691 19	70,206 83	491 92	116,320 88
1914........	14,190 98	22,488 71	73,138 81	180 63	109,999 13
1915........	14,164 65	21,376 07	74,111 12	1,129 50	110,781 34
1916........	13,249 71	21,643 98	74,058 98	1,515 62	110,468 29
1917........	13,364 71	28,110 19	75,117 17	1,833 60	118,425 67
					$1,762,852 71

There has been credited to the city by the commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district, and water furnished to water companies the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1917:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	6,998,300	78	July	6,944,700	76
February	7,438,400	82	August	6,770,500	74
March	6,667,800	74	September ...	6,379,900	70
April	6,250,600	69	October	6,431,600	70
May	6,216,000	68	November ...	6,373,400	70
June	6,458,900	71	December	7,217,100	79

The consumption for the year was:—

Low-service system	1,878,049,000 gallons
High-service system	558,735,000 gallons
Total consumption	2,436,784,000 gallons
Average daily consumption	6,676,100 gallons
Average daily consumption, per capita, for Somerville	73 gallons
Average daily consumption, per capita, for Metropolitan district	90 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1917, as registered by the Metropolitan meters:—

City or Town	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Arlington	58	62	55	52	55	59	86	76	64	57	54	58	61
Belmont	46	48	48	48	51	56	73	66	58	49	47	48	53
Boston	115	118	107	101	102	102	105	107	104	101	97	113	106
Chelsea	73	78	69	65	66	63	72	71	68	67	63	73	69
Everett	81	88	77	72	70	74	77	79	71	70	71	84	76
Lexington	63	65	69	67	72	77	93	90	74	73	71	70	74
Malden	49	50	49	48	48	46	49	48	45	43	42	49	47
Medford	50	50	49	46	45	50	53	51	53	47	46	51	49
Melrose	45	48	49	48	49	53	57	58	59	54	47	50	51
Milton	38	39	38	38	40	44	47	44	42	45	43	41	41
Nahant	48	52	57	61	84	130	230	250	154	82	54	52	105
Quincy	56	60	58	53	56	59	75	67	61	65	58	84	63
Revere	55	60	55	53	53	56	71	70	61	52	49	57	58
Somerville	78	82	74	69	68	71	76	74	70	70	70	79	73
Stoneham	60	66	59	60	66	69	71	73	82	74	74	76	69
Swampscott	45	66	74	69	53	64	92	91	71	53	49	50	65
Watertown	74	74	78	77	83	100	100	102	95	92	93	94	89
Winthrop	45	47	45	47	48	52	69	71	56	49	45	47	52
Met. Dist.............	96	100	91	86	87	88	93	93	89	86	83	96	90

The district, in order of consumption, beginnig with the lowest, stands as follows for the year 1917:—

City or Town	Gallons Total per Day	Gallons Per Capita per Day	PerCent. Services Metered
Milton	375,000	41	100
Malden	2,419,300	47	96.75
Medford	1,641,300	49	100
Melrose	992,900	51	100
Winthrop	727,200	52	100
Belmont	474,800	53	100
Revere	1,615,400	58	76.54
Arlington	997,100	61	100
Quincy	2,706,800	63	91.39
Swampscott	503,800	65	100
Stoneham	531,300	69	99.51
Chelsea	3,188,500	69	99.79
Somerville	6,676,100	73	74.23
Lexington	426,700	74	99.19
Everett	3,023,400	76	58,66
Watertown	1,584,600	89	100
Nahant	155,300	105	75.34
Boston	82,073,200	106	59.87
Total District	110,022,700	90	72.14

GENERAL.

New Work.

Building operations have fallen off to a considerable extent and there has been but little call for mains into new territory, the principal being for a residential development along North and Gordon streets in West Somerville, and for manufacturing development along Middlesex avenue in East Somerville. Several smaller districts have also been piped, all as shown in tables in this report.

Trench excavation and backfilling, pipe-laying and joint-runing with Lead-Hydro-Tite furnished by the company, were done by agreement with H. A. Hanscom Co., contractors, in the folowing streets:—

Street	Size of Pipe	Price, per Foot
Carter Terrace	6"	44 cents
Rose Street	8"	49 "
Gordon Street	12"	70 "
North Street	12"	70 "
North Street	6"	55 "

The main laid in Middlesex avenue was 20″ diameter, the intention being eventually to connect this pipe with the 48″ main of the Metropolitan system in the Fellsway boulevard in order to obtain an additional feeder of ample capacity for the East Somerville district. The early arrival of extremely cold weather stopped the work of backfilling the trench on this job and carried its completion over to the coming year.

Street-Car Sprinkling Connections.

At the request of the mayor, the department has installed seventeen connections with our water mains for the purpose of speedily filling the large tanks used by a street-car sprinkling company in sprinkling and flushing our streets.

These connections are 4″ branches cut into the mains, extending to a point between the street car tracks and terminating in a special hydrant having one outlet provided with a 90° elbow to which is attached a fitting adapted to the 5″ hose connection leading to the tank car.

The hydrant is firmly imbedded in the earth to a point just below the outlet elbow, and from this point to the street surface, about 18 inches, the head and fittings are encased by a 2-inch plank box having a cement bottom. These boxes are connected by 2″ pipe with nearby sewer manholes to carry off the drainage and are capped with heavy cast-iron frames and covers set flush with the street paving.

The hydrants are of a type in which the working parts are easily removable for repairs and each branch is provided with a 4″ gate valve and iron box independent of the hydrant.

The hydrants are operated by the sprinkler-car crew with a socket wrench and the gate valves are restricted to the use of the city in shutting off for repairs if needed and for the winter season. The customary drip-valves were removed and the outlets plugged, it being the intention to pump out the hydrants after they are closed for the season to prevent their freezing in cold weather.

On account of other obstructions in the streets many difficulties were encountered in making the connections, but the work was ultimately accomplished at a cost to the water department of $2,751.96, and has operated with entire satisfaction.

Pensions.

The name of Thomas Fitzpatrick, an efficient laborer in this department for many years, was placed on the pension payroll on December 29th, at rate of $7.58 per week.

Honor Roll.

The Water Commissioner has placed in the general office of the department in city hall a service flag containing three stars in honor of the young men of the department who have entered the service of the government during the year, and whose names are here given:—

Name	Occupation	Date of Retirement
Ralph Orne	Clerk	September 18, 1917
George L. Brown	Machinist	October 6, 1917
Charles P. Mullen	Repairer	November 28, 1917

The best wishes of the entire department force have gone with these men for their success in whatever duty they may be called upon to perform, and for their return to good health and condition at the appointed time.

High-Pressure Auxiliary Supply.

I again renew my recommendation for some action on your part toward providing the city with adequate water service in case of a conflagration. It is well known, through my numerous reports on the matter, that the high-service system of the city has for some years been unprotected by any local means of delivering high-pressure water into it should emergencies arise making it needful to do so, and this condition still exists through failure to authorize an auxiliary means of supply.

Although these are times of special conservatism in the matter of public expenditures, I believe this to be a need which merits and should receive your early and thorough investigation.

Respectfully submitted,

FRANK E. MERRILL,
Water Commissioner.

GATES SET IN NEW LOCATIONS, 1917.

Albion street, 6-inch gate, (section gate) set 14 feet 7 inches south from the north line of Albion street, on the west line of Albion court.

Beacon street, 4-inch gate, set 24 feet 8 inches west from the east line of Beacon street, 18 feet north from the north line of Dickinson street, on sprinkler hydrant branch.

Beacon street, 4-inch gate, set 24 feet 8 inches west from the east line of Beacon street, 17½ feet south from the north line of Forest street, on sprinkler hydrant branch.

Bellevue terrace, 4-inch gate, set 6 feet 8 inches east from the west line of Bellevue terace, on the north line of Albion street.

Bond street, 6-inch gate, set 63 feet south from Jaques street, 4 feet out from hydrant, on hydrant branch.

Broadway, 2-inch gate, set on west line of Fenwick street, 12 feet 6 inches south from the north line of Broadway.

Broadway, 4-inch gate, set 22 feet 6 inches north from the south line of Broadway, 23 feet west from the east line of Liberty avenue, on sprinkler hydrant branch.

Broadway, opposite City Home, 4-inch gate, set 22½ feet north from the south line of Broadway, 187 feet west from the east line of entrance to Boston Elevated property, on sprinkler hydrant branch.

Broadway, 4-inch gate, set 46 feet south from the north line of Broadway, 24 feet east from the west line of New Cross street, on sprinkler hydrant branch.

Broadway, 4-inch gate, set 17 feet 5 inches west from the east line of Main street, 78 feet south from the south line (extended) of Edgar avenue, on sprinkler hydrant branch.

Clyde street, 6-inch gate, set 16 feet east from the west line of Murdock street, 3 feet out from hydrant, on hydrant branch.

Concord avenue, 6-inch gate, set on east line of Knapp school, 4 feet out from hydrant, on hydrant branch.

Concord avenue, 6-inch gate, set 7 feet east from east line of Marion street, 4 feet out from hydrant, on hydrant branch.

Cummings street, 8-inch gate, set on west line of Middlesex avenue, in centre of Cummings street at its junction with Middlesex avenue, or 20 feet south from the north line of Cummings street, measured at right angle to north line of Cummings street.

Cummings street, 6-inch gate, set 24 feet west from the west line of Middlesex avenue, measured at right angle with Middlesex avenue, on hydrant branch.

Eastman road, 6-inch gate, set 280 feet south from Highland avenue, 4 feet out from hydrant, on hydrant branch.

Elm street, 6-inch gate, set 7 feet west from Elston street, 4 feet out from hydrant, on hydrant branch.

Elm street, 4-inch gate, set 23½ feet south from the north line of Elm street, 20½ feet east from the west line of Cedar street, on sprinkler hydrant branch.

Fairfax street, 8-inch gate, set 13 feet 4 inches north from the south line of Fairfax street, on the west line of North street.

Franklin street, 6-inch gate, set 157 feet south from Pearl street, 4½ feet out from hydrant, on hydrant branch.

Garfield avenue, 6-inch gate, set 24 feet south from Mystic avenue, 1½ feet out from hydrant, on hydrant branch.

Gordon street, 12-inch gate, set on east line of Alewife Brook parkway, 13 feet 4 inches north from the south line of Gordon street.

Gordon street, 12-inch gate, (section gate) set 598 feet west from the west line of North street, 13 feet 4 inches north from the south line of Gordon street.

Gordon street, 12-inch gate, set on west line of North street, 13 feet 4 inches north from the south line of Gordon street.

Gordon street, 6-inch gate, set 108 feet east from the east line of Alewife Brook parkway, 4 feet out from hydrant, on hydrant branch.

Gordon street, 6-inch gate, set 373 feet east from the east line of Alewife Brook parkway, 4 feet out from hydrant, on hydrant branch.

Gordon street, 6-inch gate, set 559 feet west from the west line of North street, 4 feet out from hydrant, on hydrant branch.

Gordon street, 6-inch gate, set 238 feet west from the west line of North street, 4 feet out from hydrant, on hydrant branch.

Gordon street, 6-inch gate, set 5 feet east from the east line of Alewife Brook parkway, 16 feet north from the south line of Gordon street, on blow-off (blow-off not completed).

High street, 12-inch gate, set 13 feet 4 inches north from the south line of High street, on the west line of North street.

Highland avenue, 4-inch gate, set 30 feet north from the south line of Highland avenue, 16 feet 5 inches west from the east line of Cherry street (between car tracks), on sprinkler hydrant branch.

Holland street, 4-inch gate, set 21 feet west from the east line of Holland street, 203 feet south from the south line of Winter street (projected), on sprinkler hydrant branch.

Holyoke road, 6-inch gate, set 164 feet west from the west line of Elm street, 4 feet out from hydrant, on hydrant branch.

Lake street, 6-inch gate, set 220 feet west from the west line of Hawkins street, 4 feet out from hydrant on hydrant branch.

Lincoln street, 6-inch gate, set 38 feet south from the south line of Broadway, 3½' feet out from hydrant, on hydrant branch.

Medford street, 6-inch gate, set in sidewalk, 7 feet north from the south line of Medford street, 4 feet west from the west line of School street, on hydrant branch.

Medford street, 4-inch gate, set 28 feet 4 inches east from the west line of Medford street, 4 feet 3 inches south from the south line of Prospect Hill avenue, on sprinkler hydrant branch.

Medford street, 4-inch gate, set 20 feet 4 inches east from the west line of Medford street, 12 feet 5 inches south from the north line (projected) of Lowell street, on sprinkler hydrant branch.

Middlesex avenue, 6-inch gate, set 58 feet north from the gate for Cummings street, 5 feet 6 inches east from the west line of Middlesex avenue, on blow-off.

Middlesex avenue, 20-inch gate, (section gate) set 225 feet north from the centre of 20x20x8 tee on centre line of Cummings street.

Morrison place, 2-inch gate, set 8 feet 6 inches east from the west line of Morrison place, on the north line of Morrison avenue.

Newton street, 6-inch gate, set 9 feet west from Joseph street, 4 feet out from hydrant, on hydrant branch.

North street, 12-inch gate, (section gate) set on north line of Sterling street, 10 feet east from the west line of North street.

North street, 12-inch gate, (section gate) set on north line of Conwell avenue, 10 feet east from the west line of North street.

North street, 6-inch gate, (section gate) set 10 feet east from the west line of North street on the north line of Gordon street.

North street, 6-inch gate, set 82 feet south from the south line of Gordon street, 2 feet out from hydrant, on hydrant branch.

North street, 6-inch gate, set 35 feet south from College Hill road, 6 feet 6 inches out from hydrant, on hydrant branch.

North street, 6-inch gate, set 246 feet north from Bailey street, 9 feet south from hydrant, on hydrant branch.

North street, 4-inch gate, set 19 feet east from the west line of North street, 217 feet north from the north line of Gordon street, on blow-off.

Osgood street, 6-inch gate, set 39 feet east from the east line of Granite street, 4 feet out from hydrant, on hydrant branch.

Pearl street, 4-inch gate, set 21 feet south from the north line of Pearl street, 104 feet west from the west line of Marshall street, on sprinkler hydrant branch. (Also 1-4" Smith gate used as a corporation under car tracks.)

Pleasant avenue, 6-inch gate, set 257½ feet west from Walnut street, 4 feet out from hydrant, on hydrant branch.

Rogers avenue, 6-inch gate, set 88 feet south from Kidder avenue, on hydrant branch.

Rose street, 8-inch gate, set 13 feet 4 inches west from the east line of Rose street, on the north line of Lewis street.

Rose street, 6-inch gate, set 240 feet south from the south line of Washington street, 4 feet out from hydrant, on hydrant branch.

School street, 6-inch gate, set 32 feet south from Oakland avenue, 4 feet out from hydrant, on hydrant branch.

Somerville avenue, 4-inch gate, set 1 foot 8 inches south from the south line (projected) of Poplar street, 49 feet east from the west line of Somerville avenue, on sprinkler hydrant branch.

Somerville avenue, 4-inch gate, set 22½ feet south from the north line of Somerville avenue, 13 feet east from the west line of Laurel street, on sprinkler hydrant branch.

Sterling street, 8-inch gate, set 18 feet 4 inches north from the south line of Sterling street, on the west line of North street.

Summer street, 10-inch gate (section gate), set on west line of Elston street, 15 feet south from the north line of Summer street.

Walnut street, 6-inch gate, set 87 feet north from the north line of Gilman street, 4 feet out from hydrant, on hydrant branch.

Washington street, 6-inch gate set on west line of Columbus avenue, 4 feet out from hydrant, on hydrant branch.

Washington street, 6-inch gate, set 36 feet east from the east line of Rossmore street, 4 feet out from hydrant, on hydrant branch.

Washington street, 6-inch gate, set 89 feet west from the west line of Medford street, 3 feet out from hydrant, on hydrant branch.

Washington street, 4-inch gate, set 17 feet south from the north line of Washington street, 18 feet 6 inches west from the east line of Columbus avenue, on blow-off.

Washington street, 4-inch gate, set 22 feet south from the north line of Washington street, 155 feet east from the east line (projected) of Stone avenue, on sprinkler hydrant branch.

Washington street, 4-inch gate, set 23 feet 5 inches south from the north line of Washington street, 17 feet west from the west line (projected) of Washington avenue, on sprinkler hydrant branch.

Whitfield road, 6-inch gate, set 81 feet east from the east line of Curtis street, 3 feet out from hydrant, on hydrant branch.

Whitfield road, 6-inch gate, set 321 feet east from the east line of Curtis street, 4½ feet out from hydrant, on hydrant branch.

Windsor street, 6-inch gate, set 384 feet south from Glass House court, 5½ feet out from hydrant, on hydrant branch.

Woods avenue, 10-inch gate, set on west line of North street, 13 feet 4 inches north from the south line of Woods avenue.

Gates — Recapitulation.

Gates	1"	1½"	2"	4"	6"	8"	10"	12"	14"	16"	20"	Total
Set			2	20	38	4	4	6	—	—	1	75
Removed or Discontinued	1	2	1	1	1	1	—	—	—	—	—	7

FIRE HYDRANTS.

Construction—Renewal—Removal, 1917.

Alewife Brook parkway, 6-inch Chapman hydrant, set 157 feet south from the northeast corner of grandstand.

Carter terrace, 6-inch Corey hydrant, set 169 feet south from the south line of Summer street, on end of 6-inch main pipe.

Clyde street, 6-inch Mathews hydrant set and 6-inch Holyoke hydrant removed, at 16 feet east from the west line of Murdock street.

Day street, 6-inch Mathews hydrant set and 6-inch Holyoke hydrant removed, at 10 feet south from Davis square.

Eastman road, 6-inch Mathews hydrant set and 6-inch Mathews hydrant removed, at 279 feet from Highland avenue.

Elm street, 6-inch Corey hydrant set and 6-inch Holyoke hydrant removed, at 9 feet west from Elston street.

Franklin street, 6-inch Mathews hydrant set and 6-inch Holyoke hydrant removed, at 157 feet south from Pearl street.

Gordon street, 6-inch Corey hydrant, set 108 feet east from the east line of Alewife Brook parkway.

Gordon street, 6-inch Corey hydrant, set 373 feet east from the east line of Alewife Brook parkway.

Gordon street, 6-inch Corey hydrant, set 559 feet west from the west line of North street.

Gordon street, 6-inch Corey hydrant, set 238 feet west from the west line of North street.

Heath street, 6-inch Mathews hydrant, set 98 feet west from Bond street and 6-inch Mathews hydrant, removed from 101 feet west from Bond street.

Holyoke road, 6-inch Corey hydrant set and 4-inch Holyoke hydrant removed, at 164 feet west from Elm street.

Lake street, 6-inch Corey hydrant set and 6 inch Holyoke hydrant removed, at 220 feet west from Hawkins street.

Lincoln street, 6-inch Corey hydrant set and 6-inch Holyoke hydrant removed, at 38 feet south from Broadway.

Medford street, 6-inch Chapman hydrant, set 4 feet west from School street and 6-inch Chapman hydrant, removed from 5 feet west from School street.

North street, 6-inch Corey hydrant, set 82 feet south from the south line of Gordon street.

Pleasant avenue, 6-inch Corey hydrant set and 6-inch Holyoke hydrant removed, at 257½ feet west from Walnut street.

Rogers avenue, 6-inch Corey hydrant set and 4-inch Boston Machine hydrant removed, at 88 feet from Kidder avenue.

Rose street, 6-inch Corey hydrant, set 240 feet south from the south line of Washington street.

School street, 6-inch Mathews hydrant set and 6-inch Mathews hydrant removed, at 32 feet south from Oakland avenue.

Whitfield road, 6-inch Mathews hydrant, set 321 feet east from the east line of Curtis street.

Whitfield road, 6-inch Corey hydrant, set 81 feet east from the east line of Curtis street.

Windsor street, 6-inch Corey hydrant, set 384 feet south from the south line of Glass House court, 40 feet east from the east line of Windsor street.

Hydrants — Recapitulation.

	4"	6"	8"	Total
Set	—	24	—	24
Removed	2	11	—	13

STREET-CAR SPRINKLER CONNECTIONS INSTALLED IN 1917.

Location	Service	Size
Beacon Street, opposite Forrest Street	Low	4"
Beacon Street, near Dickinson Street	Low	4"
Broadway, opposite City Home	High	4"
Broadway, opposite Liberty Avenue	Low	4"
Broadway, junction with Main Street	High	4"
Broadway, at Cross Street, Inbound	Low	4"
Broadway, at Cross Street, Outbound	Low	4"
Elm Street, opposite Cedar Street	Low	4"
Highland Avenue, opposite Cherry Street	Low	4"
Holland Street, south of Winter Street	Low	4"
Medford Street, opposite Lowell Street	Low	4"
Medford Street, opposite Prospect Hill Avenue	Low	4"
Pearl Street, junction with Medford Street	Low	4"
Somerville Avenue, opposite Laurel Street	Low	4"
Somerville Avenue, opposite Poplar Street	Low	4"
Washington Street, easterly junction Somerville Ave.	High	4"
Washington Street, near Franklin Avenue	Low	4"

Street Mains, Gates, Hydrants, Etc., Laid, Set and Removed in 1917.

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				SPRINKLER CONNEC.			
		LAID.		REMOVED.		SET.		REMOV'D		SET.		REMOV'D		SET.		REMOV'D		SET.		REMOV'D	
		Size.	Feet.	Size.	Feet.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.
Albion street	Main gate: (section gate) 14 feet 7 inches south from the north line of Albion street, on the west line of Albion court.					6"	1														
Alewife Brook pkwy	Hydrant: 157 feet south from the northeast corner of grandstand.	6"	3							6"	1										
Bailey street	Reconstruction: street main; extending 8-inch main pipe in Bailey street from its former connection with old 6-inch high service pipe on the east side of North street to the new 12-inch low service pipe on the west side of North street.	8"	24																		
Beacon street	Sprinkler hydrant: 32 feet 9 inches west from the east line of Beacon street, 18 feet north from the north line of Dickinson street.	4"	8															1			
Beacon street	Gate on sprinkler hydrant branch: 24 feet 8 inches west from the east line of Beacon street, 18 feet north from the north line of Dickinson street.					4"	1														
Beacon street	Sprinkler hydrant: 33 feet west from the east line of Beacon street, 17½ feet south from the north line of Forest street.	4"	10															1			
	Gate on sprinkler hydrant branch: 24 feet 8 inches west from the east line of Beacon street, 17½ feet south from the north line of Forest street.					4"		1"													
Bellevue terrace	Replaced street main: from connection with main pipe in Albion street to point 90 feet north from the north line of Albion street, 6 feet 8 inches east from the west line of Bellevue terrace.	4" 2"	13 88	1"	101																
	Main gate: 6 feet 8 inches east from the west line of Bellevue terrace, on the north line of Albion street.					4"	1	1"	1												
Bond street	Gate on hydrant branch: 63 feet south from Jaques street, 4 feet out from hydrant.					6"	1														
Broadway	Street main: from connection with main pipe in Fenwick street to point 138 feet west from the west line of Fenwick street; in sidewalk, 12 feet 6 inches south from the north line of Broadway.	2"	149																		

	Main gate: on west line of Fenwick street, 12 feet 6 inches south from the north line of Broadway.					2"	1												
	Sprinkler hydrant: in chamber between tracks, 23 feet west from the east line of Liberty avenue, or 1 foot 4 inches west from the centre of sewer manhole.	4"	13														1		
	Gate on sprinkler hydrant branch: 22 feet 6 inches north from the south line of Broadway, 23 feet west from the east line of Liberty avenue.					4"	1												
	Sprinkler hydrant: 32 feet 4 inches north from the south line of Broadway, 187 feet west from the east line of entrance to Boston Elevated property.	4"	15														1		
	Gate on sprinkler hydrant branch: 22½ feet north from the south line of Broadway, 187 feet west from the east line of entrance to Boston Elevated property.					"4	1												
	Sprinkler hydrant: 47 feet south from the north line of Broadway, 20 feet east from the west line of New Cross street.	4"	9														2		
	Sprinkler hydrant: 47 feet south from the north line of Broadway, 17½ feet east from the west line of New Cross street.																		
	Gate on sprinkler hydrant branch: 46 feet south from the north line of Broadway, 24 feet east from the west line of New Cross street.					4"	1												
	Sprinkler hydrant: 71½ feet north from the south line of Broadway, 247 feet west from the west line of Sycamore street.	4"	62														1		
	Gate on sprinkler hydrant branch: 17 feet 5 inches west from the east line of Main street, 78 feet south from the south line (extended) of Edgar avenue.					4"	1												
Carter terrace	Street main: from connection with main pipe in Carter terrace at south line of Summer street to point 169 feet south from the south line of Summer street, 13 feet 4 inches west from the east line of Carter terrace.	6"	169																
	Hydrant: 169 feet south from the south line of Summer street, on end of 6-inch main pipe.								6"	1									
Clyde street	Hydrant: 16 feet east from the west line of Murdock street.								6"	1	6"	1							
	Gate on hydrant branch: 16 feet east from the west line of Murdock street, 3 feet out from hydrant.					6"	1												
College Hill road	Reconstruction, street main: extending 6-inch main pipe in College Hill road from its former connection with old 6-inch high service pipe on the east side of North street to the new 12-inch low service pipe on the west side of North street.	6"	19																
Columbus avenue	Street main: from connection with main pipe in Washington street to connection with Columbus avenue main at point 6 feet south from the north line of Washington street and 17 feet west from the east line of Columbus avenue.	6"	12																
Concord avenue	Gate on hydrant branch: 7 feet east from the east line of Marion street, 4 feet out from hydrant.					6"	1												

Street Mains, Gates, Hydrants, Etc., Laid, Set and Removed in 1917.—Continued.

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				SPRINKLER CONNEC.			
		LAID.		REMOVED.		SET.		REMOV'D		SET.		REMOV'D		SET.		REMOV'D		SET.		REMOV'D	
		Size.	Feet.	Size.	Feet.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.
Concord ave. (Con.)	Gate on hydrant branch: on east line of Knapp school, 4 feet out from hydrant.					6"	1														
Conwell avenue	Reconstruction, street main: (cross connection in North street) from 12x12x12 tee located 17 feet south from the north line of Conwell avenue and 10 feet east from the west line of North street, easterly 16½ feet from centre of above tee to centre of a 12-inch ¼ bend set underneath a catch basin drain pipe, (depth at this point is 7 feet) thence southerly from centre of above bend, 9 2-3 feet to centre of a 12x12x10 tee set for Conwell avenue main (also set underneath another catch basin drain pipe) thence still southerly 4 feet, connecting by a 12x6 reducer and 2 feet of 6-inch pipe with the old North street 6-inch main; also connecting by 4 feet of 10-inch pipe, easterly, with the old Conwell avenue 10-inch main.	10" 12"	4 22	6"	4																
Cummings steeet	Street main: from connection with main pipe in Cummings street at point 238 feet east from the west line of Mystic avenue to connection with 20-inch main pipe in Middlesex avenue; 13 feet 4 inches south from the north line of Cummings street.	8"	535																		
	Main gate: on west line of Middlesex avenue, in centre of Cummings street at its junction with Middlesex avenue, or 20 feet south from the north line of Cummings street, measured at right angle to north line of Cummings street.					8"	1														
	Gate on hydrant branch: 24 feet west from the west line of Middlesex avenue, measured at right angle with Middlesex avenue. (Hydrant not yet set.)	6"	3			6"	1														
Day street	Street main: from connection with high service main pipe in Day street at point 8 feet west from the west line of Davis square to point 100 feet west from the west line of Davis square, 9 feet 6 inches south from the north line of Day street.	8"	87																		

	Hydrant: 10 feet south from Davis square.									6"	1	6"	1							
Eastman road	Hydrant: 280 feet from Highland avenue.									6"	1	6"	1							
	Gate on hydrant branch: 280 feet south from Highland avenue, 4 feet out from hydrant.					6"	1													
Elm street	Hydrant: 9 feet west from Elston street.									6"	1	6"	1							
	Gate on hydrant branch: 7 feet west from Elston street, 4 feet out from hydrant.					6"	1													
	Sprinkler hydrant: 32 feet 8 inches south from the north line of Elm street, 16½ feet east from the west line of Cedar street.	4"	8															1		
	Gate on sprinkler hydrant branch: 23½ feet south from the north line of Elm street, 20½ feet east from the west line of Cedar street.					4"	1													
Fairfax street	Street main: from connection with main pipe in North street to 8-inch gate set on the west line of North street, 13 feet 4 inches north from the south line of Fairfax street.	8"	9																	
	Main gate; 13 feet 4 inches north from the south line of Fairfax street, on the west line of North street.					8"	1													
Franklin street	Hydrant: 157 feet south from Pearl street.									6"	1	6"	1							
	Gate on hydrant branch: 157 feet south from Pearl street, 4½ feet out from hydrant.					6"	1													
Garfield avenue	Gate on hydrant branch; 24 feet south from Mystic avenue, 1½ feet out from hydrant.					6"	1													
Gordon street	Street main: from east line of Alewife Brook parkway to connection with 12-inch main pipe in North street; 13 feet 4 inches north from the south line of Gordon street.	12"	1,257																	
	Main gate: on east line of Alewife Brook parkway, 13 feet 4 inches north from the south line of Gordon street.					12"	1													
	Main gate: (section gate) 598 feet west from the west line of North street, 13 feet 4 inches north from the south line of Gordon street.					12"	1													
	Main gate: on west line of North street, 13 feet 4 inches north from the south line of Gordon street.					12"	1													
	Hydrant: 108 feet east from the east line of Alewife Brook parkway.	6"	7							6"	1									
	Gate on hydrant branch: 108 feet east from the east line of Alewife Brook parkway, 4 feet out from hydrant.					6"	1													
	Hydrant: 373 feet east from the east line of Alewife Brook parkway.	6"	7							6"	1									
	Gate on hydrant branch: 373 feet east from the east line of Alewife Brook parkway, 4 feet out from hydrant.					6"	1													
	Hydrant: 559 feet west from the west line of North street.	6"	7							6"	1									
	Gate on hydrant branch: 559 feet west from the west line of North street, 4 feet out from hydrant.					6"	1													
	Hydrant: 238 feet west from the west line of North street.	6"	7							6"	1									

Street Mains, Gates, Hydrants, Etc., Laid, Set and Removed in 1917.—Continued.

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				SPRINKLER CONNEC.			
		LAID.		REMOVED.		SET.		REMOV'D		SET.		REMOV'D		SET.		REMOV'D		SET.		REMOV'D	
		Size.	Feet.	Size.	Feet.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.
Gordon st. (Con.)	Gate on hydrant branch: 238 feet west from the west line of North street, 4 feet out from hydrant.					6"	1														
	Gate on blow-off: 5 feet east from the east line of Alewife Brook parkway, 16 feet north from the south line of Gordon street. (Blow-off not complete.)					6"	1														
Heath street	Hydrant: 98 feet west from Bond street.									6"	1	6"	1								
High street	Street main: from connection with main pipe in North street to point 61 feet west from the west line of North street, 13 feet 4 inches north from the south line of High street.	12"	70																		
	Main gate: 13 feet 4 inches north from the south line of High street, on the west line of North street.					12"	1														
Highland avenue	Sprinkler hydrant; 30 feet north from the south line of Highland avenue, 18 feet 6 inches west from the east line of Cherry street, (between car tracks.)	4"	2															1			
	Gate on sprinkler hydrant branch: 30 feet north from the south line of Highland avenue, 16 feet 5 inches west from the east line of Cherry street (between car tracks).					4"	1														
Holland street	Sprinkler hydrant: 30½ feet west from the east line of Holland street, 221 feet south from the south line of Winter street (projected).	4"	7															1			
	Gate on sprinkler hydrant branch; 21 feet west from the east line of Holland street, 203 feet south from the south line of Winter street (projected).					4"	1														
Holyoke road	Hydrant: 164 feet west from Elm street.									6"	1	4"	1								
	Gate on hydrant branch: 164 feet west from the west line of Elm street, 4 feet out from hydrant.					6"	1														
Lake street	Hydrant; 220 feet west from Hawkins street.									6"	1	6"	1								
	Gate on hydrant branch: 220 feet west from the west line of Hawkins street, 4 feet out from hydrant.					6"	1														
Lincoln street	Hydrant: 38 feet south from Broadway.									6"	1	6"	1								
	Gate on hydrant branch: 38 feet south from the south line of Broadway, 3½ feet out from hydrant.					6"	1														

Medford street	Hydrant: 4 feet west from School street.									6"	1	6"	1							
	Gate on hydrant branch: in sidewalk, 7 feet north from the south line of Medford street, 4 feet west from the west line of School street.					6"	1													
	Sprinkler hydrant: 24 feet 10 inches east from the west line of Medford street, 9 feet south from the south line of Prospect Hill avenue.	4"	5															1		
	Gate on sprinkler hydrant branch: 28 feet 4 inches east from the west line of Medford street, 4 feet 3 inches south from the south line of Prospect Hill avenue.					4"	1													
	Sprinkler hydrant: 28 feet east from the west line of Medford street, 16½ feet south from the north line (projected) of Lowell street.	4"	7															1		
	Gate on sprinkler hydrant branch: 20 feet 4 inches east from the west line of Medford street, 12 feet 5 inches south from the north line (projected) on Lowell street.					4"	1													
Middlesex avenue	Blow-off: gate set 58 feet north from the gate for Cummings street, 5 feet 6 inches east from the west line of Middlesex avenue.	6"	18			6"	1							6"	1					
	Street main: from point 13 feet south from the centre of 20x20x8 tee on centre line of Cummings street, northerly 492 feet from above point. At point 13 feet south from the centre of 20x20x8 tee for Cummings street, centre of pipe is 2 feet 6 inches east from the west line of Middlesex avenue, (lying close to storm drain). At point 113 feet north from centre of 20x20x8 tee from Cummings street centre of pipe is 5 feet 9 inches east from the west line of Middlesex avenut. From this point northerly, to present end of pipe this location is maintained.	20"	489																	
	Main gate: (section gate) 225 feet north from the centre of 20x20x8 tee on centre line of Cummings street.					20"	1													
Morrison place	Replaced street main: from connection with main pipe in Morrison avenue to point 154 feet north from the north line of Morrison avenue; 8 feet 6 inches east from the west line of Morrison place.	2"	186	1¼"	186															
	Replaced street main: from conection with main pipe in Porter street to point 249 feet west from the west line of Porter street, 6 feet 6 inches north from the south line of Mountain avenue.																			
	Main gate: 8 feet 6 inches east from the west line of Morrison place, on the north line of Morrison avenue.					2"	1	1¼"	1											
Mountain avenue	Replaced street main: from connection with main pipe in Porter street to point 249 feet west from the west line of Porter street, 6 feet 6 inches north from the south line of Mountain avenue.	6"	261	2"	261															

Street Mains, Gates, Hydrants, Etc., Laid, Set and Removed in 1917.—Continued.

STREET.	DESCRIPTION.	PIPE.				GATES.				HY-DRANTS.				BLOW-OFFS.				SPRINKLER CONNEC.			
		LAID.		REMOVED		SET.		RE-MOV'D		SET.		RE-MOV'D		SET.		RE-MOV'D		SET.		RE-MOV'D	
		Size.	Feet.	Size.	Feet.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.
Mountain avenue (Con.)	Replaced main gate: on west line of Porter street, 6 feet 6 inches north from the south line of Mountain avenue.					6"	1	2"	1												
Newton street	Gate on hydrant branch: 9 feet west from Joseph street, 4 feet out from hydrant.					6"	1														
North street	Street main: from connection with main pipe at Woods avenue to point 217 feet north from the north line of Gordon street, 10 feet east from the west line of North street.	6" 12"	237 202																		
	Main gate: (section gate) 10 feet east from the west line of North street, on the north line of Gordon street.					6"	1														
	Hydrant: 82 feet south from the south line of Gordon street.	6"	3							6"	1										
	Gate on hydrant branch: 82 feet south from the south line of Gordon street, 2 feet out from the hydrant.					6"	1														
	Blow-off: gate set 19 feet east from the west line of North street, 217 feet north from the north line of Gordon street.	4"	16			4"	1							4"	1						
	Replaced street main: from connection with main pipe in Woods avenue to connection with 12x12x12 tee opposite Conwell avenue, 10 feet east from the west line of North street.	12"	1,082	6"	1,082			6"	1												
	Main gate: (section gate) on north line of Sterling street, 10 feet east from the west line of North street.					12"	1														
	Main gate: (section gate) on north line of Conwell avenue, 10 feet east from the west line of North street					12"	1														
	Extension of hydrant branch: connecting hydrant branch located 35 feet south from College Hill road to new 12-inch low service main pipe.	6"	16																		
	Gate on hydrant branch; 35 feet south from College Hill road, 6 feet 6 inches out from hydrant.					6"	1														
	Extension of hydrant branch: connecting hydrant branch located 246 feet north from Bailey street to new 12-in. low service main pipe.	6"	19																		
	Gate on hydrant branch: 246 feet north from Bailey street, 9 feet south from hydrant.					6"	1														

Osgood street	Gate on hydrant branch: 39 feet east from the east line of Granite street, 4 feet out from hydrant.					6"	1													
Pearl street	Sprinkler hydrant: 25 feet 3 inches south from the north line of Pearl street, 104 feet west from the west line of Marshall street.	4"	7																1	
	Gate on sprinkler hydrant branch: 21 feet south from the north line of Pearl street, 104 feet west from the west line of Marshall street. (1-4-inch Smith gate used as a corporation under car track).					4"	1													
Pleasant avenue	Hydrant: 257½ feet west from Walnut street.									6"	1	6"	1							
	Gate on hydrant branch; 257½ feet west from Walnut street, 4 feet out from hydrant.					6"	1													
Porter avenue	Replaced street main: from connection with main pipe in Porter street to point 153 feet west from the west line of Porter street, 8 feet north from the south line of Porter avenue.	2" 6"	152 12	1½"	164															
	Replaced main gate: 8 feet north from tht south line of Porter avenue, on the west line of Porter street.					4"	1	1½"	1											
Powder House blvd	Street main: from connection with main pipe in Powder House boulevard at point 898 feet north from the north line of North street to point 922 feet north from the north line of North street, 5 feet west from the east line of Powder House boulevard.	12"	24																	
Rogers avenue	Hydrant: 88 feet from Kidder avenue.									6"										
	Gate on hydrant branch: 88 feet south from Kidder avenue.					6"	1				1	4"	1							
Rose street	Street main: from connection with main pipe in Rose street at point 25 feet south from the south line of Washington street to point 7 feet south from the north line of Lewis street, 13 feet, 4 inches west from the east line of Rose street.	8"	432																	
	Main gate: 13 feet, 4 inches west from the east line of Rose street, on the north line of Lewis street.					8"	1			6"										
	Hydrant: 240 feet south from the south line of Washington street.	6"	7								1									
	Gate on hydrant branch: 240 feet south from the south line of Washington street, 4 feet out from hydrant.					6"	1			6"										
School street	Hydrant: 32 feet south from Oakland avenue.										1	6"	1							
	Gate on hydrant branch: 32 feet south from Oakland avenue, 4 feet out from hydrant.					6"	1													
Somerville avenue	Sprinkler hydrant: 8 feet south from the south line (projected) of Poplar street, 37½ feet east from the west line of Somerville avenue.	4"	11																1	
	Gate on spr. hyd. branch: 1 foot, 8 inches from the south line (projected) of Poplar street, 49 feet east from the west line of Somerville avenue.					4"	1													

Street Mains, Gates, Hydrants, Etc., Laid, Set and Removed in 1917.—Continued.

STREET.	DESCRIPTION.	PIPE.				GATES.				HY-DRANTS.				BLOW-OFFS.				SPRINKLER CONNEC.			
		LAID.		REMOVED.		SET.		RE-MOV'D		SET.		RE-MOV'D		SET.		RE-MOV'D		SET.		RE-MOV'D	
		Size.	Feet.	Size.	Feet.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.	Size.	No.
Somerville avenue (Con.)	Sprinkler hydrant: 35 feet, 10 inches south from the north line of Somerville avenue, 13 feet east from the west line of Laurel street.	4"	10															1			
	Gate on spr. hyd. branch: 22½ feet south from the north line of Somerville avenue, 13 feet east from the west line of Laurel street.					4"	1														
Sterling street	Street main: from connection with main pipe in North street to 8" gate set on the west line of North street, 13 feet, 4 inches north from the south line of Sterling street.	8"	9																		
	Main gate: 13 feet, 4 inches north from the south line of Sterling street, on the west line of North street.					8"	1														
Summer street	Main gate: (section gate) on west line of Elston street, 15 feet south from the north line of Summer.					10"	1														
Walnut street	Replaced street main: from connection with main pipe in Highland avenue to connection with main pipe in Walnut street, 13 feet, 4 inches west from the east line of Walnut street.	10"	255	8" 4"	30 225																
	Replaced main gate: 13 feet, 4 inches west from the east line of Walnut street, on the south line of Medford street.					10"	1	8"	1												
	Replaced main gate: 13 feet, 4 inches west from the east line of Walnut street, on the north line of Highland avenue.					10"	1	4"	1												
	Gate on hydrant branch: 87 feet north from the north line of Gilman street, 4 feet out from hydrant.					6"	1														
Washington street	Blow-off: gate set 17 feet south from the north line of Washington street, 18 feet, 6 inches west from the east line of Columbus avenue.	4"	5			4"	1							4"	1						
	Gate on hydrant branch: on west line of Columbus avenue, 4 feet out from hydrant.					6"	1														
	Gate on hydrant branch: 36 feet east from the east line of Rossmore street, 4 feet out from hydrant.					6"	1														
	Gate on hydrant branch: 89 feet west from the west line of Medford street, 3 feet out from hydrant.					6"	1														

	Sprinkler hydrant: 45 feet south from the north line of Washington street, 172 feet east from the east line (projected) of Stone avenue.	4"	21														1				
	Gate on spr. hyd. branch: 22 feet south from the north line of Washington street, 155 feet east from the east line (projected) of Stone avenue.					4"	1														
	Sprinkler hydrant: 36 feet south from the north line of Washington street, 16 feet west from the west line (projected) of Washington avenue.	4"	10														1				
	Gate on spr. hyd. branch: 23 feet, 5 inches south from the north line of Washington street, 17 feet west from the west line (projected) of Washington avenue.					4"	1														
Whitfield road	Hydrant: 321 feet east from the east line of Curtis street.	6"	7							6"	1										
	Gate on hydrant branch: 321 feet east from the east line of Curtis street, 4½ feet out from hydrant.					6"	1														
	Hydrant: 81 feet east from the east line of Curtis street.	6"	3							6"	1										
	Gate on hydrant branch: 81 feet east from the east line of Curtis street, 3 feet out from hydrant.					6"	1														
Windsor street	Hydrant: 384 feet south from the south line of Glass House court, 40 feet east from the east line of Windsor street.	6"	3							6"	1										
	Gate on hydrant branch: 384 feet south from Glass House court and 5½ feet out from hydrant.					6"	1														
Woods avenue	Street main: from connection with main pipe in North street to gate set on the west line of North street, 13 feet, 4 inches north from the south line of Woods avenue.	10"	9																		
	Main gate: on west line of North street, 13 feet, 4 inches north from the south line of Woods avenue.					10"	1														
			6,144		2,053		75		7		24		13		3		17				

Summary of Statistics

FOR THE YEAR ENDING DECEMBER 31, 1917.

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS.

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics.

Population, census 1915, 86,854; present, estimated 90,000.
Date of construction: commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressures, by the Metropolitan Water Works.

Statistics of Consumption of Water.

Estimated total population at date, 90,000.
Estimated population on lines of pipe, 90,000.
Estimated population supplied, 90,000.
Total consumption for the year, 2,436,784,000 gallons.
Average daily consumption, 6,676,100 gallons.
Gallons per day to each inhabitant, 73.

Statistics Relating to Distribution System, 1917.

MAINS.

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 6,144 feet; discontinued 2,053 feet; net extension, 4,091 feet.
Total now in use, 102.39, miles.
Number of leaks per mile, .09.
Number of hydrants added during year (public, 11; private, 0), 11.
Number of hydrants (public and private) now in use, 1,235.
Number of stop gates added during year, 68.
Number of stop gates now in use, 1,801.
Number of blow-offs, 177.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES.

Kind of pipe: Lead, wrought iron — lead-lined; wrought iron — cement-lined; cast iron.
Sizes, one-half to eight inches.
Extended less discontinued, 2,885 feet.
Total now in use, 88.36 miles.
Number of service taps added, 118; discontinued, 29; net increase, 89.
Number now in use, 13,509.
Number of meters added, 491; discontinued, 225; net increase, 266.
Number now in use, 10,028.
Percentage of services metered, 74.23.
Percentage of receipts from metered water, 82.
Number of motors and elevator registers added, 0; removed, 1.
Number now in use, 4 (included in number of meters).

FINANCIAL STATISTICS.

REVENUE.

From Water Rates:—		
Fixture rates	$47,526 77	
Meter rates	215,191 00	
Total from consumers		$262,717 77
From other sources:—		
Water service assessments		3,494 53
Labor and materials		3,542 59
Total		$269,754 89

EXPENDITURES.

Water Works Maintenance:—		
Operation (management, repairs and renewals)	$52,410 85	
Special:—		
Miscellaneous accounts	3,542 59	
Total maintenance		$55,953 44
Interest on bonds		640 00
Payment on bonds		5,000 00
Water Works Buildings		1,496 99
Water Works Construction:—		
Mains	$14,067 14	
Services	3,998 04	
Meters	1,709 16	
Car-sprinkler connections	2,751 96	
Total construction		22,526 30
Unclassified expenses:—		
Metropolitan water assessment		118,425 67
Balance:—		
Ordinary	$65,546 50	
Total balance		65,546 50
Total		$269,754 89

Disposition of balance: applied to municipal purposes.

Cost of works to date	$1,061,188 59
Bonded debt at date	11,000 00

Average rate of interest, 4 per cent.

Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1918

ANNUAL REPORT

OF THE

Water Commissioner

Compliments of

FRANK E. MERRILL,

Water Commissioner

SOMERVILLE PRESS PRINT
1919

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS.

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House in Boston.

Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.

Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet.
Highest building elevation in the city 145 feet.

Area of city, including land and water, about 4.22 square miles.
Land, 2,461.50 acres; water and marsh, 238.50 acres.
Population 1915, census, 86,854.
Present population, estimated, 91,000.
Entire population on line of pipe and supplied with water.

Water works owned by City of Somerville.
Construction commenced in 1868.
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds.
High service 45 to 100 pounds.

Mayor.
HON. CHARLES W. ELDRIDGE.

Water Commissioner,
FRANK E. MERRILL.

Office of the Water Department.
Room 10, City Hall.

Department Buildings and Yard.
Cedar street, near Broadway.

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REPORT OF THE WATER COMMISSIONER.

OFFICE OF THE WATER COMMISSIONER,
January, 1919.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1918, this being the forty-fifth annual report of the water department and my nineteenth as water commissioner:—

Revenue and Expenditures.

Water bills have been issued as follows:—

"Annual" water charges, amounting to	$44,527 32
"Additional" water charges, amounting to . . .	2,076 10
"Metered" water charges, amounting to	221,936 26
	$268,539 68

	Annual and Additional	Metered	
Abatements and refunds on above charges . .	$2,006 19	$2.269 16	4,275 35
Income from sale of water . . .			$264,264 33
Receipts; water service assessments .		$1,040 27	
Receipts; labor and materials sold:—			
Miscellaneous accounts . . .		3,972 37	5,012 64
Total income of water works . .			$269,276 97

This amount was used as follows:—
For water works purposes:—

Water works maintenance	$52,039 18		
Water works extension .	5,821 79		
Miscellaneous accounts .	3,972 37		
		$61,833 34	
Interest on water loan bonds . . .		440 00	
Maturing water loan bonds		5,000 00	
Metropolitan water works assessment.		125,358 55	
Maintenance water works buildings .		1,154 63	
			$193,786 52
For other municipal purposes:—			
Surplus			75,490 45
			$269,276 97

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements.

WATER MAINTENANCE ACCOUNT.

	Dr.	Cr.
Amount appropriated by board of aldermen		$58,400 00
Department accounts		681 99
Materials furnished for extension of the water works		4,376 37
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$52,039 18	
Amount expended for materials used in extension of the water works	4,376 37	
Miscellaneous accounts	3,972 37	
Labor and materials furnished municipal departments	681 99	
Unexpended balance	2,388 45	
	$63,458 36	$63,458 36

WATER WORKS EXTENSION ACCOUNT.

	Dr.	Cr.
Amount appropriated by board of aldermen		$10,000 00
Department accounts		92 33
Labor and materials furnished municipal departments	$92 33	
Amount expended for labor and materials used in extension of the water works	5,821 79	
Transferred by board of aldermen	3,874 97	
Unexpended balance	303 24	
	$10,092 33	$10,092 33

Cost of Water Works.

The total cost of water works on December 31, 1917 as represented by the expenditures from appropriations for water works extension was	$1,061,188 59
Expended during the year 1918, on extension account	5,821 79
Total expenditures, December 31, 1918	$1,067,010 38

Water Debt.

Water loan bonds have been issued on funded debt account to the amount of $1,017,000; this has been reduced by $1,111,000, leaving the water debt on December 31, 1918, $6,000.

The outstanding bonds mature as follows:—

Year	Amount
1919	$4,000
1920	2,000

Water Works Income from 1898 and its Distribution.

The water income and its distribution from 1898 to 1918, inclusive, is shown in the following table:—

Total water income, years 1898 to 1918, inclusive		$4,888,988 57
Distribution:—		

Water Works Account.

Water Works Construction, Renewal, Maintenance and Operation	$1,219,578 31	
Water bonds	268,000 00	
Interest	86,255 00	
Metropolitan Water Assessments	1,888,211 26	
Maintenance Water Works buildings	3,997 68	
		$3,466,042 25

Other Municipal Accounts.

Various municipal departments through specific appropriations and general revenue account	$1,422,946 32
	$4,888,988 57

Water Distribution System — Construction.

STREET MAINS.

Approximate number of feet of street mains in the city, January 1, 1918, (including hydrant branches and blow-offs)		540,630
Feet of street mains laid in 1918 . . .	477	
Feet of hydrant branches laid in 1918 . .	36	
Feet of blow-off branches laid in 1918 . .	30	
Total feet of pipe laid	543	
Feet of street mains removed and replaced .	85	
Net increase in feet of pipe		458
Total approximate feet of pipe in the city .		541,088
Total pipe mileage, approximately . . .		102.48

The sizes and lengths of pipe laid and removed are as follows:—

Size	Feet Laid	Feet Removed	Size	Feet Laid	Feet Removed
2"	85	85	12"	258	0
4"	30	0	16"	114	0
6"	56	0			0

The street mains constructed and replaced during the year are as follows:—

Constructed:—	Size of Pipe	Feet Laid	Feet Removed	Size Removed
Alewife Brook Parkway .	16"	114		
" " " .	12"	20		
Gordon Street . . .	12"	7		
High Street . . .	12"	202		
Mystic Avenue . . .	12"	36		
New Hampshire Avenue .	6"	7		
Sycamore Street . . .	6"	6		
Replaced:—				
Warren Street . . .	2"	85	85	2"
Hydrant branches and blow-off pipes		66		
		543	85	

Hydrants, Gates, Etc.

Number of fire hydrants in city January 1, 1918		1,171	
Number set during year	22		
Number removed during the year	18		
Net increase in number of hydrants		4	
Total number of public fire hydrants			1,175
Number of private fire hydrants, January 1, 1918		64	
Number set by private companies during the year		0	
Total number of private fire hydrants receiving their supply from the city mains			64
Number of gates in city, January 1, 1918		1,801	
Number set during the year for streets	1		
Number of section gates set	2		
Number set on hydrant branches	23		
Number set on blow-off branches	0		
Number set on car-sprinkler connections	0		
		26	
Number of street gates removed	0		
Number of section gates removed	0		
		0	
Net increase in number of gates		26	
Total number of gates in city			1,827
Number of check-valves in city January 1, 1918		8	
Number of blow-offs in city January 1, 1918		177	
Number added during the year		1	
Total number of blow-offs			178
Number of waterposts in city January 1, 1918		79	
Number removed during the year		0	
Total number of waterposts			79
Number of drinking fountains in city January 1, 1918		9	
Number removed during the year		1	
Total number of drinking fountains			8
Number of car-sprinkler connections in city January 1, 1918		17	
Number installed during the year		0	
Total number of car-sprinkler connections in city			17

Water Services.

Number of services in city January 1, 1918, (approximately)		13,509	
Number laid during the year	23		
Number permanently discontinued	18		
Net increase in services		5	
Total number of water services in city			13,514
Amount received for services laid in 1918			$3,494.53
Number feet service pipe in city January 1, 1918			466,567
Number feet laid during the year	816		
Number feet discontinued	1,021		
Decrease in feet of service pipe			205
Total feet service pipe in city (approximately)			466,362
Total service mileage (approximately)			88.33

Size, number and length of service pipes laid in 1918:

16—¾"—543' 1—1"—72' 3—2"—91' 2—4"—32' 1—6"—28'

Number of fire services installed during 1918		3
Locations	No.	Size
James' Soap Factory—Columbia Street	1	6"
New England Bakery Co.—Joy Street	2	4"

Water Meters

Number of water meters in city, January 1, 1918	10,024	
Number installed during the year, new	121	
Number reset	121	
	242	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	153	
Net increase in number of operating meters		89
Number of motor registers in service		3
Total number of meters and registers		10,116
Per cent. of all services metered		74.86

Operating Meters December 31, 1918.

KIND.	SIZE.								Total.
	5/8"	3/4"	1"	1½"	2"	3"	4"	6"	
Nash	175								175
Empire	4								4
Crown	4	2	3	3	2	2			16
Gem							1		1
Hersey			5	1		2			8
Hersey Disc	253	22	9	1	4				289
Torrent								1	1
Trident	506	42	23	6	6				583
Trident Crest					2	2	3		7
Trident Comp.					8	2	2		12
Union	14	13	6	1	4				38
Union Special		14	2	2					18
Columbia	44								44
King	658								658
Lambert	4,147	149	27	1					4,324
Worthington Disc	3,867	32	6	4					3,909
Worthington Turbine								2	2
Keystone	24								24
Totals	9,696	274	81	19	26	8	6	3	10,113
Motor and elevator registers									3
									10,116

The meters installed in 1918 were classed as follows:—

Applications of property owners	52
New services	39
General installation	30
Reset	121
Total	242

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	89
Services permanently discontinued	8
Replaced by other meters	56
Total	153
Motor registers discontinued	1

Meters installed yearly on old and new services under the State Compulsory Meterage law, which requires complete meterage of city by the year 1928:—

Year	Average installation required on old services	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	411	755	344	344	147
1909	411	637	226	570	201
1910	411	501	90	660	169
1911	411	528	117	777	200

1912	411	423	12	789	236
1913	411	432	21	810	255
1914	411	422	11	821	231
1915	411	439	28	849	217
1916	411	434	23	872	203
1917	411	163	248 (less)*	624	154
1918	411	82	329 (less)*	295	39

* On account of war-time conditions of labor and material.

The following table shows the progress of meter installation of Somerville by years and the results therefrom in water consumption:

Year	Population	Number of Services	Number of Meters	Per Cent Metered	Per Capita Consumption
1897	58,000	9,601	....	....	(Est.) 88
1898	59,000	9,806	143	1.5	" 88
1899	61,000	10,053	226	2.25	" 88
1900	62,000	10,291	202	2	" 88
1901	64,000	10,520	224	2	" 88
1902	66,000	10,710	269	2.5	" 88
1903	68,000	10,854	647	6	" 88
1904	69,000	11,059	1,272	11.5	89
1905	70,000	11,279	2,092	18.5	89
1906	71,000	11,489	2,829	24.5	89
1907	72,000	11,662	3,455	29.5	90
1908	74,000	11,817	4,333	36.5	89
1909	76.000	12,018	5,155	43	84
1910	78,000	12,149	5,817	48	80
1911	79,000	12,357	6,533	53	74
1912	80,000	12,596	7,171	57	79
1913	82,000	12,827	7,856	61	72
1914	85,000	13,034	8,499	65	73
1915	87,000	13,233	9,155	69	67
1916	90,000	13,420	9,763	72.75	69
1917	91,000	13,509	10,028	74.23	*73
1918	91,000	13.514	10,116	74.86	*80

* Winter of 1917-18 was of extraordinary severity and frost penetration was very deep so that water was allowed to run to waste to prevent its freezing. Industrial consumption was also considerably increased.

Summary of Pipes and Fixtures of the Water System
December 31, 1918.

Feet of main pipe (approximately)	541,088
Feet of service pipe (approximately)	466,362
Service connections (approximately)	13,514
Public fire hydrants	1,175
Private fire hydrants	64
Gates	1,827
Check valves	8
Meters	10,113
Motor registers	3
Waterposts	79
Car-sprinkler connections	17
Blow-offs	178
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION.

The annual assessments paid by this city as its proportionate part of the cost and operation of the Metropolitan water works are given below:—

Year	Sinking Fund	Maintenance	Interest	Maturing Bonds	Total
1898........	No division	made			$14,250 19
1899........	"	"			20,975 58
1900........	"	"			28,689 24
1901........	$12,491 73	$12,033 79	$32,291 24		56,816 76
1902........	19,014 85	12,955 64	30,427 40		62,397 89
1903........	15,748 56	12,763 10	48,776 77		77,288 43
1904........	16,404 42	15,393 87	54,938 64		86,736 93
1905........	21,358 11	13,666 71	55,535 91		90,560 73
1906........	22,345 50	17,412 51	57,402 07		97,160 08
1907........	25,365 30	18,880 01	62,089 30		106,334 61
1908........	24,865 73	15,221 12	68,604 23		108,691 08
1909........	24,812 23	21,220 56	66,540 41		112,573 20
1910........	25,018 52	18,212 28	66,825 45		110,056 25
1911........	25,424 55	19,573 82	69,849 26	$246 66	115,094 29
1912........	24,469 82	16,111 70	68,205 16	445 46	109,232 14
1913........	24,930 94	20,691 19	70,206 83	491 92	116,320 88
1914........	14,190 98	22,488 71	73,138 81	180 63	109,999 13
1915........	14,164 65	21,376 07	74,111 12	1,129 50	110,781 34
1916........	13,249 71	21,643 98	74,058 98	1,515 62	110,468 29
1917........	13,364 71	28,110 19	75,117 17	1,833 60	118,425 67
1918........	14,193 89	29,185 04	79.975 44	2,004 18	125,358 55
					$1,888.211 26

There has been credited to the city by the commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district, and water furnished to water companies the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1918:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	8,870,200	96	July	7,156,100	77
February	9,530,000	103	August	6,832,200	73
March	8,215,000	89	September ..	6,633,300	71
April	7,414,800	80	October	6,572,600	70
May	7,398,300	80	November ..	6,679,800	71
June	7,554,900	81	December	6,497,800	69

The consumption for the year was:—

Low-service system	2,105,921,000 gallons
High-service system	607,212,000 gallons
Total consumption	2,713,133,000 gallons
Average daily consumption	7,433,200 gallons
Average daily consumption, per capita, for Somerville	80 gallons
Average daily consumption, per capita, for Metropolitan district	105 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1918, as registered by the Metropolitan meters.

City or town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	68	104	99	78	79	88	84	75	69	64	58	60	76
Belmont	58	86	68	58	62	66	61	62	61	53	55	56	62
Boston	137	146	124	114	115	117	117	118	117	112	109	114	120
Chelsea	92	94	79	68	70	73	77	67	67	67	66	67	74
Everett	114	126	94	73	76	75	75	75	74	71	68	70	83
Lexington	77	114	106	87	92	94	89	87	76	64	63	58	84
Malden	59	80	81	68	63	60	60	60	59	56	53	51	62
Medford	60	[illegible]	[illegible]	65	63	67	63	62	54	52	48	47	62
Melrose	70	108	80	62	67	65	61	59	58	55	56	55	66
Milton	46	61	59	49	51	56	46	39	39	41	40	39	47
Nahant	94	122	138	89	142	236	261	276	187	124	68	51	149
Quincy	88	104	113	101	101	101	106	109	103	105	112	112	105
Revere	83	101	75	60	64	66	70	73	61	54	52	53	67
Somerville	96	103	89	80	80	81	77	73	71	70	71	69	80
Stoneham	87	151	128	101	72	66	65	61	58	56	59	58	80
Swampscott	63	87	73	88	73	87	88	91	76	71	64	54	76
Watertown	108	137	126	108	127	131	138	147	137	131	154	134	131
Winthrop	54	96	82	68	67	66	74	72	56	49	49	47	65
Met. Dist.	118	130	111	100	101	103	103	103	100	96	95	97	105

The district, in order of consumption, beginning with the lowest, stands as follows for the year 1918:—

	Gallons		Per Cent.
City or Town	Total per Day	Per Capita per Day	Services Metered
Milton	434,500	47	100
Malden	3,254,700	62	97.29
Medford	2,161,900	62	100
Belmont	577,900	62	100
Winthrop	941,900	65	100
Melrose	1,180,600	66	100
Revere	1,975,500	67	76.98
Chelsea	3,501,200	74	99.81
Arlington	1,290,300	76	100
Swampscott	606,100	76	100
Somerville	7,433,200	80	74.86
Stoneham	617,700	80	99.52
Everett	3,365,800	83	63.06
Lexington	493,700	84	100
Quincy	4,621,700	105	90.46
Boston	94,634,000	120	59.92
Watertown	2,434,500	131	100
Nahant	228,200	149	75.58
Total District	129,753,400	105	72.47

CONSTRUCTION — MAINTENANCE — OPERATION.

As a result of war conditions and regulations but very little construction work has been done during the year, but the department has been busily engaged, nevertheless, on the general upkeep of the system and in overcoming damage wrought by the freezeup of last winter.

The winter of 1917-18 will go down in the annals of water-works practice as the coldest on record and one that put the efficiency of our department to the test in maintaining a supply of water throughout the trying period of many weeks when the frost penetration had reached to and below the grade of the water mains and service pipes.

The men of the department worked heroically day and night and great credit is due them for their willing and persistent efforts to relieve those who were sorely inconvenienced by the freezing of the water supply to their houses.

Thawing devices using hot water, steam and electricity were put into service and the situation was at length brought under control with a record of about 6 per cent. of the city's meters and 4 per cent. of the water services frozen at some time during the months of January and February; also, one 10″ main, one 6″ main and two 2″ service mains were frozen, all at dead ends, and were successfully thawed by electricity; the fire hydrant system also suffered severely but was maintained with practically no loss of service at time of need.

The electric thawing device used consisted of a 50 k. w. transformer, taking current from the Edison system 2200 volt primary wires and delivering to the water pipes a current of varying amperage controlled by a water rheostat and conveyed by a heavy cable grounded to a fire hydrant on one side and clamped to the house service on the other, thus completing the electrical circuit. The apparatus was carried about the city on a heavy wagon drawn by a pair of horses and was set up at various points so that one connection with the primary wires would reach as many frozen services as possible, in some instances as many as eight being thus reached through cable lines several hundred feet in length. One hundred sixty-nine services were thawed by this method in a period of twelve working days, between February 13th and 26th, the lowest day's results being eight and the highest nineteen.

About a dozen others were tried but the desired results failed, probably on account of some poor metallic connection in the pipe line which obstructed the flow of the current and failed to heat the pipes although evidently forming an arc which in some instances was sufficiently intense to melt the brass fittings and led to the necessity subsequently of digging down to and repairing the connections.

On the whole the operation of the device was very satisfactory, being especially serviceable on such pipes as were too small or crooked to get an ordinary hot-water thawing tube through. It is worthy of record also that in the hands of our expert operator there was no difficulty in thawing cement-lined service pipes which we had been led to believe, from results in other places, were from the nature of their construction beyond the range of this electrical method of thawing.

In May a new 20″ connection with the Metropolitan system was installed by the Metropolitan Water and Sewerage Board at a point on Alewife Brook Parkway near Capen Street, and was equipped with a 6″ Hersey Detector meter having a 3″ by-pass. In June this installation was connected by our local department with the 12″ main in Gordon Street and the low-service water from the new supply was turned into this street in place of the high-service which had previously been supplied, thus transferring 14 houses containing 28 tenements to the low-service system.

In October similar transfer to the low-service system was made as follows:

Street	Houses	Tenements
Alewife Brook Parkway	3	3
Bailey St.	10	20
Chetwynd Road, from Hillside Road to West Adams St.	2	4
College Hill Road	15	30
Conwell Avenue, from North St., to easterly line of Hillsdale Road	31	87
High St.,	5	10
Hillsdale Road	13	26
North St., from southerly line of Raymond Ave., to Medford city line	40	76
Raymond Avenue	39	78
West Adams St.	29	58
West Quincy St.	10	20

The water pressure in the district affected by this change has been reduced about thirty pounds, but is still ample for domestic and fire service. The transfer should relieve to an appreciable extent the strain upon our overtaxed high-service system and, as the low-service is a gravity supply, there should result a fuel saving equivalent to that needed heretofore in pumping into the high-service approximately 100,000 gallons of water daily.

Labor.

Wages of common laborers were advanced on April 1st from $2.75 to $3.00 a day, and of skilled laborers from $2.90 to $3.25 a day. In October the mayor further advanced the wages of common laborers to $3.25 a day and of skilled laborers to $3.35 a day.

Laborers are not paid for holidays but are granted Saturday afternoons off throughout the year without loss of pay; they are also given a vacation of two weeks with pay. They are paid time-and-a-half if called out on emergency work nights, holidays and Sundays; if the work is continuous, regular pay is given.

Pension Roll.

Michael E. Brady, an efficient and honored employee of the department for more than twenty-five years, was added to the list of pensioners in March at rate of $7.49 a week. It is with regret that his death is also to be recorded this year, the end of his earthly life having come in November.

Richard Whelan, an old-time and faithful servant of the city, and a pensioner since May, 1913, also passed away this year in the month of April.

There are now on the pension roll the names of Andrew McCaffrey, John H. Keefe and Thomas Fitzpatrick.

Financial.

The year has been a very successful one financially and notwithstanding extraordinary and unexpected expenses in the early part of the year our books closed showing a transfer by the Board of Aldermen from our extension appropriation of $3,874.97, unexpended balances in our department, appropriation accounts amounting to $2,691.69 and a general surplus of $75,490.45 after paying all indebtedness chargeable for the year to the water department or connected with its operations.

The policy of paying every bill contracted up to the closing of the last payroll of the year in December has been continued and in pursuance thereof all outstanding accounts against the department have been settled.

Emergency Pump.

No substantial interest seems thus far to have developed in the matter of providing an emergency pump for the high-service system and its annual recommendation may as well now be dropped from these pages where it has appeared for the last four years.

In this swan song the writer desires, however, to once more record his belief that the subject of securing to the higher districts of this city, a city which is said to be the most densely populated of any in the United States, an ample and dependable water supply and suitable fire protection at all times is one of sufficient importance to warrant your earnest consideration.

Tabulation.

The accompanying table gives further details of the work performed during the year in the main distribution system and is made a part of this report.

Respectfully submitted,

FRANK E. MERRILL,
Water Commissioner

Street Mains, Gates, Hydrants, Etc., Laid, Set and Removed in 1918.

STREET.	DESCRIPTION.	PIPE.				GATES.				HY-DRANTS.				BLOW-OFFS.			
		LAID.		REMOVED.		SET.		RE-MOV'D		SET.		RE-MOV'D		SET.		RE-MOV'D	
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.
Adrian street	Main gate: 13 feet 4 inches west from east line of Adrian street, on south line of Joseph street.					6"	S										
Alewife Brook pkwy	Street main: From connection with Metropolitan Water works 16" main pipe at point 77 feet north from north line of Gordon street, to point 60 feet south from north line of Gordon street.	16" 12"	114 20														
	Section gate: On south line of Gordon street, 10 feet west from east line of Alewife Brook parkway.					12"	R										
Arlington street	Hydrant: 36 feet east from Hathorn street.									6"	Co.	6"	H C				
	Gate on hydrant branch: 36 feet east from Hathorn street, 4 feet out from hydrant.					6"	R										
Buckingham street	Hydrant: On south line of Dimick street.									6"	Co.	6"	H C				
	Gate on hydrant branch: On south line of Dimick street, 4 feet out from hydrant.					6"	R										
Calvin street	Hydrant: 37 feet south from Dimick street.									6"	Co.	6"	H C				
	Gate on hydrant branch: 37 feet south from Dimick street, 4 feet out from hydrant.					6"	R										
Columbus avenue	Hydrant: 151 feet east from Bonner avenue.									6"	Co.	6"	Co.				
	Gate on hydrant branch: 151 feet east from Bonner avenue, 4 feet out from hydrant.					6"	S										
Conlon ct (foot of)	Street main: Set 6" tee on main pipe 6 feet 4 inches east from east or dead end of Conlon court.																
Cross street	Hydrant: 13 feet south from Auburn avenue.									6"	Co.	6"	M				
	Gate on hydrant branch: 13 feet south from Auburn avenue, 3 feet out from hydrant.					6"	S										
Cummings street	Hydrant: 24 feet west from west line of Middlesex avenue. (Completion of 1917 work.)	6"	4							6"	Co.						
Curtis street	Hydrant: 64 feet south from south line of Powder House boulevard.									6"	Co.	4"	BM				
	Gate on hydrant branch: 64 feet south from south line of Powder House boulevard, 3½ feet out from hydrant.					6"	R										
Electric avenue	Hydrant: 170 feet east from Packard avenue connected with tee that was set when main was laid in Electric avenue.	6"	7							6"	Co.						
	Gate on hydrant branch: 170 feet east from Packard avenue, 4 feet out from hydrant.					6"	S										

Fairmount avenue	Hydrant: 280 feet west from Curtis street.							6"	Co.	6"	H C		
	Gate on hydrant branch: 280 feet west from Curtis street, 4 feet out from hydrant.					6"	R						
Gordon street	Street main: From connection with 16" main pipe in Alewife Brook parkway to connection with 12" pipe in Gordon street.	12"	64										
	Blow-off: 5 feet east from east line of Alewife Brook parkway, 16 feet north from south line of Gordon street. (Completion of work commenced in 1917.)	4"	30									4"	1
Hathorn street	Hydrant: 145 feet south from Broadway.							6"	M	6"	H C		
	Gate on hydrant branch: 145 feet south from Broadway, 4 feet out from hydrant.					6"	R						
High street	Replaced street main: From connection with 12" main in High street at point 61 feet west from west line of North street, to point 264 feet west from west line of North street.	12"	202	2"	202								
	Hydrant: 69 feet west from North street.	6"	7					6"	Co.				
	Gate on hydrant branch: 69 feet west from North street, 4 feet out from hydrant.					6"							
Holland street	Hydrant: 5 feet from south line of Jay street.									6"	M		
Jay street	Hydrant: 14 feet west from Holland street, low service.							6"	M				
	Gate on hydrant branch: 14 feet west from west line of Holland street, 4 feet out from hydrant.					6"	R						
Josephine avenue	Hydrant: 213 feet south from Broadway.							6"	Co.	6"	H C		
	Gate on hydrant branch: 213 feet south from Broadway, 4 feet out from hydrant.					6"	R						
Kenneson road	Gate on hydrant branch. 121 feet south from Broadway, 3 feet out from hydrant.					6"	S						
Marion street	Hydrant: 40 feet east from Dimick street.							6"	Co.	6"	P C		
	Gate on hydrant branch: 40 feet east from Dimick street, 2 feet out from hydrant.					6"	R						
Medford street	Hydrant: 70 feet north from Maple street.							6"	Co.	6"	M		
	Gate on hydrant branch: 70 feet north from Maple street, 4 feet out from hydrant.					6"	S						
Mystic avenue	Street main: From point 1 foot east from west line of New Hampshire avenue, to point 2 feet west from east line of New Hampshire avenue.	12"	36										
	Hydrant: 12 feet west from west line of Fellsway West.									6"	M		
	Hydrant: On west line of Fellsway West, 9½ feet north from south line of Mystic avenue.							6"	Ch.				
	Gate on hydrant branch: 9½ feet north from south line of Mystic avenue, 4 feet west from hydrant.					6"	R						
New Hampshire av	Street main: From connection with main pipe in Mystic avenue, to connection with main in New Hampshire avenue.	6"	7										
North street	Hydrant: 572 feet from north line of Bailey street.									6"	H G		

Street Mains, Gates, Hydrants, Etc., Laid, Set and Removed in 1918.—Continued.

STREET.	DESCRIPTION.	PIPE.				GATES.				HY-DRANTS.				BLOW-OFFS.			
		LAID.		REMOVED.		SET.		RE-MOV'D		SET.		RE-MOV'D		SET.		RE-MOV'D	
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.
Oxford street	Hydrant: 280 feet west from School street.									6"	Co.	4"	B M				
	Gate on hydrant branch: 280 feet west from School street, 8 feet out from hydrant.					6"	R										
Pearson avenue	Hydrant: 308 feet north from Kidder avenue.									6"	Co.	6"	H G				
	Gate on hydrant branch: 308 feet north from Kidder avenue, 4½ feet out from hydrant.					6"	R										
Raymond avenue	Section gate: 13 feet 4 inches north from south line of Raymond avenue, and 15 feet east from west line of house No. 60 Raymond avenue.					6"	R										
	Hydrant: 300 feet east from North street.	6"	6							6"	Co.						
	Gate on hydrant branch: 300 feet east from North street, 4 feet out from hydrant.					6"	R										
	Hydrant: 250 feet west from Curtis street.	6"	6							6"	Co.						
	Gate on hydrant branch: 250 feet west from Curtis street, 4 feet out from hydrant.					6"	R										
	Gate on hydrant branch: Opposite No. 60 Raymond avenue, 4 feet out from hydrant.					6"	R										
Somerville avenue	Hydrant: 650 feet from west line of East Cambridge, north side low level.											6"	H G				
Sycamore street	Street main: From connection with main in Sycamore street at point 64 feet north from north line of Willoughby street, to point 70 feet from north line of Willoughby street.	6"	6														
Walter terrace	Hydrant: 111 feet south from Walter street.	6"	6							6"	Co.						
	Gate on hydrant branch: 111 feet south from Walter street, 4 feet out from hydrant.					6"	S										
Warren street	Replaced street main: From connection with 2" main in Warren street at west line of Medford street, to point 85 feet west from west line of Medford street.	2"	85	2"	85												
Washington street	Hydrant: 6 feet west from west line of Florence street.									6"	M	6"	H G				
	Gate on hydrant branch: 6 feet west from west line of Florence street, 6 feet out from hydrant.					6"	R										
	B.M.—Boston Machine; Co.—Corey; Ch.—Chapman; H.C.—Holyoke Compression; H.G.—Holyoke Gate; M.—Matthews; P.C.—Pratt & Cady; S.—Smith; R.—Rensselaer.		543		287	26				22		18			1		

SUMMARY OF STATISTICS.

FOR THE YEAR ENDING DECEMBER 31, 1918.

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS.

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics.

Population, census 1915, 86,854; present, estimated 91,000.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressures, by the Metropolitan Water Works.

Statistics of Consumption of Water.

Estimated total population at date, 91,000.
Estimated population on lines of pipe, 91,000.
Estimated population supplied, 91,000.
Total consumption for the year, 2,713,133,000 gallons.
Average daily consumption, 7,433,200 gallons.
Gallons per day to each inhabitant, 80.

Statistics Relating to Distribution System, 1918.

MAINS.

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 543 feet; discontinued 85 feet; net extension, 458 feet.
Total now in use, 102.48 miles.
Number of leaks per mile, 0.24.
Number of hydrants added during year (public, 4; private, 0), 4.
Number of hydrants (public and private) now in use, 1,239.
Number of stop gates added during year, 26.
Number of stop gates now in use, 1,827.
Number of blow-offs, 178.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES.

Kind of pipe: Lead; wrought iron — lead-lined; wrought iron — cement-lined; cast iron.
Sizes, one-half to eight inches.
Extended 816 feet; discontinued 1,021 feet.
Total now in use, 88.33 miles.
Number of service taps added, 23; discontinued, 18; net increase, 5.
Number now in use, 13,514.
Number of meters added, 242; meters and motor registers discontinued, 154; net increase, 88.
Number now in use, 10,116.
Percentage of services metered, 74.86.
Percentage of receipts from metered water, 83.
Number of motors and elevator registers added, 0; removed, 1.
Number now in use, 3 (included in number of meters).

FINANCIAL STATISTICS.

REVENUE.

From Water Rates:—		
Fixture rates	$44,597 23	
Meter rates	219,667 10	
Total from consumers		$264,264 33
From other sources:—		
Water service assessments		1,040 27
Labor and materials		3,972 37
Total		$269,276 97

EXPENDITURES.

Water Works Maintenance:—		
Operation (management, repairs and renewals)	$52,039 18	
Special:—		
Miscellaneous accounts	3,972 37	
Total maintenance		$56,011 55
Interest on bonds		440 00
Payment on bonds		5,000 00
Water Works Buildings		1,154 63
Water Works Construction:—		
Mains	$3,976 69	
Services	958 50	
Meters	886 60	
Total construction		$5,821 79
Unclassified expenses:—		
Metropolitan water assessment		125,358 55
Balance:—		
Ordinary	$75,490 45	
Total balance		75,490 45
Total		$269,276 97

Disposition of balance: applied to municipal purposes.

Cost of works to date	$1,067,010 38
Bonded debt at date	6,000 00

Average rate of interest, 4 per cent.

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Annual Report

of the

Water Commissioner

of the

City of Somerville

Massachusetts

1919

ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

Compliments of

FRANK E. MERRILL,

Water Commissioner.

SOMERVILLE PRESS PRINT
1920

SOMERVILLE WATER WORKS.

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS.

Settled, when part of Charlestown, 1630.
(Home of Colonial Governor John Winthrop).
Incorporated a town, 1842.
Established a city, 1872.

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet.
Highest building elevation in the city 145 feet.
Area of city, including land and water, about 4.22 square miles.
Land, 2,461.50 acres; water and marsh, 238.50 acres.
Population 1915, census, 86,854.
Present population, estimated, 95,000.
Entire population on line of pipe and supplied with water.

Water works owned by City of Somerville.
Construction commenced in 1868.
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds.
High service 45 to 100 pounds.

Mayor.

HON. CHARLES W. ELDRIDGE.

Water Commissioner.

FRANK E. MERRILL.

Office of the Water Department.

Room 10, City Hall.

Department Buildings and Yard.

Cedar street, near Broadway.

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS:

1868 — 1871
SOMERVILLE MYSTIC WATER COMMITTEE (5)
Acts 1868; Chap. 202

1872 — 1890
SOMERVILLE MYSTIC WATER BOARD (5)
Acts 1871; Chap. 182

1891 — 1897
SOMERVILLE MYSTIC WATER BOARD (3)
Acts 1890; Chap. 218

1898 — 1899
BOARD OF WATER COMMISSIONERS (3)
Acts 1898; Chap. 33

1900 —
WATER COMMISSIONER (1)
Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER.

OFFICE OF THE WATER COMMISSIONER,
January, 1921.

To His Honor, the Mayor, and the Board of Aldermen :—

I present herewith my report for the year ending December 31, 1920, this being the forty-seventh annual report of the water department and my twenty-first as water commissioner:

Revenue and Expenditures.

Water bills have been issued as follows :—

"Annual" water charges, amounting to	$40,229 50
"Additional" water charges, amounting to . . .	1,230 63
"Metered" water charges, amounting to	216,246 33
	$257,706 46

	Annual and Additional	Metered	
Abatements and refunds on above charges .	$1,043 75	$339 83	
			1,383 58
Income from sale of water . . .			$256,322 88
Receipts; water service assessments .		$1,905 10	
Receipts; labor and materials sold: —			
Miscellaneous accounts .	$4,797 65		
Less abated and carried to 1921 accounts .	359 29		
		4,438 36	
			6,343 46
Total income of water works . .			$262,666 34

This amount was used as follows :—

For water works purposes :—

Under Control of the Water Commissioner.

Water Works Maintenance . . .	$61,306 77	
Water Works extension .	6,051 40	
Miscellaneous accounts .	4,438 36	
		$71,796 53

Not Under Control of the Water Commissioner.

Interest on water loan bonds	$80 00	
Maturing water loan bonds	2,000 00	
Metropolitan water works assessment	127,505 74	
Maintenance water works buildings	986 64	
		$130,572 38

For other municipal purposes: —

Not Under Control of the Water Commissioner.

Surplus	$60,297 43
	$262,666 34

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements.

WATER MAINTENANCE ACCOUNT.

Appropriation made by Board of Aldermen		$62,500 00
Transferred from Water Works Extension account		3,400 00
Department accounts; receipts		1,094 64
Water works extension account; receipts		4,500 15
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$61,306 77	
Amount expended for materials used in extension of the water works	4,500 15	
Miscellaneous accounts	4,438 36	
Labor and materials furnished municipal departments	1,094 64	
Balance:		
Unexpended	154 87	
	$71,494 79	$71,494 79

WATER WORKS EXTENSION ACCOUNT.

Appropriation made by Board of Aldermen		$12,000 00
Amount expended for labor and materials used in extension of the water works	$6,051 40	
Transferred by Board of Aldermen:		
to Water Maintenance Account	3,400 00	
to Interest account	2,400 00	
Balance: unexpended	148 60	
	$12,000 00	$12,000 00

Cost of Water Works.

The total cost of water works on December 31, 1919, as represented by the expenditures from appropriations for water works extension was	$1,073,196 79
Expended during the year 1920, on extension account	6,051 40
Total expenditures, December 31, 1920 .	$1,079,248 19

Water Debt.

Water loan bonds have been issued on funded debt account to the amount of $1,017,000; the last of these bonds was paid in October, 1920, and there is now no water-works debt.

Water Works Income from 1898 and its Distribution.

The water income and its distribution from 1898 to 1920, inclusive, is shown in the following table:—

Total water income, years 1898 to 1920, inclusive		$5,400,199 18
Distribution:—		

Water Works Account.

Water Works Construction, Renewal, Maintenance, Operation and Misc. Accounts	$1,351,054 17	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments . .	2,143,799 90	
Maintenance Water Works buildings .	5,849 33	
		$3,861,278 40

Other Municipal Accounts.

Various municipal departments through specific appropriations and general revenue account	$1,538,920 78
	$5,400,199 18

Water Distribution System — Construction

STREET MAINS.

Approximate number of feet of street mains in the city, January 1, 1920, (including hydrant branches and blow-offs)		541,645
Feet of street mains laid in 1920	1,095	
Feet of hydrant branches laid in 1920 . . .	114	
Feet of blow-off branches laid in 1920 . . .	13	
Total feet of pipe laid	1,222	

Feet of pipe removed or replaced . . .	**974**	
Net increase in feet of pipe		**248**
Total approximate feet of pipe in the city . .		**541,893**
Total pipe mileage, approximately . . .		**102.63**

The sizes and lengths of pipe laid and discontinued are as follows:—

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
1"	.	179	4"	21	72
.	.	.	6"	391	655
.	.	.	8"	.	50
.	.	.	10"	62	.
2"	139	18	12"	609	.

The pipes constructed and replaced during the year are as follows:—

	Size of Pipe	Feet Laid	Feet Discontinued	Size Discontinued
Constructed:—				
Mystic Avenue . . .	6"	17		
Windsor St. . . .	6"	220		
Do. Con. with private pipe .	6"	6		
Replaced:—				
Congress Place . . .	12"	9	9	6"
Linden Place . . .	2"	139	139	1"
Linehan Court . . .	6"	32	32	1"
Linwood Pl. . . .	4"	8	8	1"
Linwood St. . . .	12"	600	604	6"
	6"	4		
Poplar St., East . . .	10"	36	30	4"
			6	6"
Poplar St., West . .	10"	24	18	4"
			6	6"
Hydrant branches, blow-off pipes and waterpost connections		127	122	
		1,222	974	

Hydrants, Gates Etc.

Number of fire hydrants in city January 1, 1920		1,177	
Number set during year	23		
Number removed during the year . . .	21		
Net increase in number of hydrants . .		2	
Total number of public fire hydrants .			1,179
Number of private fire hydrants, January 1, 1920		64	
Number set by private companies during the year		0	

Total number of private fire hydrants receiving their supply from the city mains			64
Number of gates in city, January 1, 1920		1,856	
Number set during the year for streets	6		
Number of section gates set	0		
Number set on hydrant branches	24		
Number set on blow-off branches	2		
Number set on car-sprinkler connections	0		
		32	
Number of street gates removed	6		
Number of waterpost gates removed	2		
		8	
Net increase in number of gates		24	
Total number of gates in city			1,880
Number of check-valves in city			8
Number of blow-offs in city January 1, 1920		183	
Number added during the year		2	
Total number of blow-offs			185
Number of waterposts in city January 1, 1920		74	
Number removed during the year		2	
Total number of waterposts			72
Number of drinking fountains in city			8
Number of car-sprinkler connections in city			17

Water Services.

Number of services in city January 1, 1920 (approximately)		13,544	
Number laid during the year	28		
Number permanently discontinued	18		
Net increase in services		10	
Total number of water services in city			13,554
Amount received for services laid in 1920			$1,905.10
Number feet service pipe in city January 1, 1920 (city and private) approximately		467,177	
Number feet laid during the year	1,214		
Number feet discontinued	845		
Increase in feet of service pipe		369	
Total feet service pipe (city and private) (approximately)			467,546
Total service mileage (approximately)			88.55

Size, number and length of services installed in 1920:

15–⅝″–485′ 4–¾″–340′ 3-1″–214′ 1-2″–33′ 4-4″–112′ 1-6″–30′

Number of fire services installed during 1920 (Included in above)	4

Location	No.	Size
Beacon St. — Bailie Basket Co.	1	6″
Fitchburg St. — The Great Atlantic & Pacific Tea Co.	2	4″
Horace St. — Norton Tallow Co.	1	4″

Water Meters.

Number of water meters in city, January 1, 1920		10,319
Number installed during the year, new	160	
Number reset	123	
	283	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	133	
Net increase in number of operating meters		150
Number of motor registers in service		3
Total number of meters and registers		10,472
Per cent. of all services metered		77.26

Operating Meters December 31, 1920.

Size	⅝″	¾″	1″	1½″	2″	3″	4″	6″	Total
No.	10052	273	87	15	26	8	6	2	10469
Motor and elevator registers									3
									10472

The meters installed in 1920 were classed as follows:—

Applications of property owners	32
New services	45
General installation	83
Reset	123
Total	283

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	60
Services permanently discontinued	13
Replaced by other meters	60
Total	133

Meters installed yearly on old and new services under the State Compulsory Meterage law, which requires complete meterage of city by the year 1928:—

Year	Average installation required on old services	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	411	755	344	344	147
1909	411	637	226	570	201
1910	411	501	90	660	169
1911	411	528	117	777	200
1912	411	423	12	789	236
1913	411	432	21	810	255
1914	411	422	11	821	231
1915	411	439	28	849	217
1916	411	434	23	872	203
1917	411	163	248 (less)*	624	154
1918	411	82	329 (less)*	295	39
1919	411	166	245 (less)*	50	23
1920	411	115	296 (less)*	246†	45

* On account of war-time conditions of labor and material.
† Deficiency.

The following table shows the progress of meter installation of Somerville by years and the results therefrom in water consumption:

Year	Population	Number of Services	Number of Meters	Per Cent Metered	Per Capita Consumption
1897	58,000	9,601	....	....	(Est.) 88
1898	59,000	9,806	143	1.5	" 88
1899	61,000	10,053	226	2.25	" 88
1900	62,000	10,291	202	2	" 88
1901	64,000	10,520	224	2	" 88
1902	66,000	10,710	269	2.5	" 88
1903	68,000	10,854	647	6	" 88
1904	69,000	11,059	1,272	11.5	89
1905	70,000	11,279	2,092	18.5	89
1906	71,000	11,489	2,829	24.5	89
1907	72,000	11,662	3,455	29.5	90
1908	74,000	11,817	4,333	36.5	89
1909	76,000	12,018	5,155	43	84
1910	78,000	12,149	5,817	48	80
1911	79,000	12,357	6,533	53	74
1912	80,000	12,596	7,171	57	79
1913	82,000	12,827	7,856	61	72
1914	85,000	13,034	8,499	65	73
1915	87,000	13,233	9,155	69	67
1916	90,000	13,420	9,763	72.75	69
1917	91,000	13,509	10,028	74.23	73
1918	91,000	13,514	10,116	74.86	80
1919	92,000	13,544	10,322	76.21	69
1920 Census	93,033	13,554	10,472	77.26	77

Summary of Pipes and Fixtures of the Water System

December 31, 1920.

Feet of main pipe (approximately)	541,893
Feet of service pipe (approximately)	467,546
Service connections (approximately)	13,554
Public fire hydrants	1,179
Private fire hydrants	64
Gates	1,880
Check valves	8
Meters	10,472
Motor registers	3
Waterposts	72
Car-sprinkler connections	17
Blow-offs	185
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION.

The annual assessments paid by this city as its proportionate part of the cost and operation of the Metropolitan water works are given below:—

Year	Sinking Fund	Maintenance	Interest	Maturing Bonds	Total
1898........	No division	made			$14,250 19
1899........	"	" "			20,975 58
1900........	"	" "			28,689 24
1901........	$12,491 73	$12,033 79	$32,291 24		56,816 76
1902........	19,014 85	12,955 64	30,427 40		62,397 89
1903........	15,748 56	12,763 10	48,776 77		77,288 43
1904........	16,404 42	15,393 87	54,938 64		86,736 93
1905........	21,358 11	13,666 71	55,535 91		90,560 73
1906........	22,345 50	17,412 51	57,402 07		97,160 08
1907........	25,365 30	18,880 01	62,089 30		106,334 61
1908........	24,865 73	15,221 12	68,604 23		108,691 08
1909........	24,812 23	21,220 56	66,540 41		112,573 20
1910........	25,018 52	18,212 28	66,825 45		110,056 25
1911........	25,424 55	19,573 82	69,849 26	$246 66	115,094 29
1912........	24,469 82	16,111 70	68,205 16	445 46	109,232 14
1913........	24,930 94	20,691 19	70,206 83	491 92	116,320 88
1914........	14,190 98	22,488 71	73,138 81	180 63	109,999 13
1915........	14,164 65	21,376 07	74,111 12	1,129 50	110,781 34
1916........	13,249 71	21,643 98	74,058 98	1,515 62	110,468 29
1917........	13,364 71	28,110 19	75,117 17	1,833 60	118,425 67
1918........	14,193 89	29,185 04	79,975 44	2,004 18	125,358 55
1919........	13,765 81	33,723 64	78,335 58	2,257 87	128,082 90
1920........	12,559 45	37,814 68	74,903 80	2,227 81	127,505 74
					$2,143,799 90

There has been credited to the city by the commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district, and water furnished to water companies the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1920:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	8,574,600	92	July	7,052,700	75
February	8,320,200	89	August	7,031,600	75
March	7,869,700	85	September	6,763,100	72
April	6,862,200	74	October	6,761,800	72
May	6,782,700	73	November	6,636,600	71
June	6,858,900	73	December	6,636,300	70

The consumption for the year was:—

Low-service system	2,058,666,000 gallons
High-service system	568,240,000 gallons
Total consumption	2,626,906,000 gallons
Average daily consumption	7,177,300 gallons
Average daily consumption, per capita, for Somerville	77 gallons
Average daily consumption, per capita, for Metropolitan district	105 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1920, as registered by the Metropolitan meters.

City or Town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	57	59	54	50	55	54	66	77	57	53	49	48	56
Belmont	54	55	57	60	51	52	57	70	54	50	47	46	54
Boston	148	147	134	119	114	122	122	122	120	121	117	116	125
Chelsea	94	90	85	77	74	72	75	74	75	69	65	66	76
Everett	96	92	89	81	80	80	82	85	84	85	87	86	86
Lexington	63	62	70	62	64	67	74	84	68	66	61	57	66
Malden	58	58	57	55	55	56	58	64	60	55	53	40	57
Medford	49	48	46	42	45	46	48	44	42	42	40	40	44
Melrose	64	64	67	59	57	58	63	67	61	59	55	54	61
Milton	44	46	48	44	45	49	47	43	45	49	48	43	46
Nahant	123	119	95	74	122	169	281	272	205	127	78	66	145
Quincy	105	103	93	89	88	92	95	98	94	90	86	85	93
Revere	73	72	66	60	63	69	80	78	68	63	62	59	68
Somerville	92	89	85	74	73	73	75	75	72	72	71	70	77
Stoneham	129	131	127	99	91	92	98	102	84	85	80	83	100
Swampscott	63	65	67	66	73	89	112	113	96	80	72	70	81
Watertown	97	105	98	95	94	96	99	101	88	71	65	65	89
Winthrop	56	56	56	50	52	54	70	71	59	52	49	48	56
Met. Dist.	123	121	112	100	96	102	104	105	101	101	97	96	105

The district, in order of consumption, beginning with the lowest, stands as follows for the year 1920:—

City or Town	Total per Day	Gallons Per Capita per Day	Per Cent. Services Metered
Medford	1,739,700	44	100
Milton	430,900	46	100
Belmont	591,400	54	100
Arlington	1,055,600	56	100
Winthrop	876,400	56	100
Malden	2,793,300	57	97
Melrose	1,108,100	61	100
Lexington	424,300	66	100
Revere	1,975,900	68	79
Chelsea	3,316,400	76	99
Somerville	6,636,300	77	77
Swampscott	657,200	81	100
Everett	3,455,200	86	68
Watertown	1,911,700	89	100
Quincy	4,472,500	93	90
Stoneham	660,100	100	99
Boston	94,297,400	125	74
Nahant	192,600	145	75
Total District	127,265,500	105	74

Construction — Maintenance — Operation.

Substantially the same conditions in building costs prevailed as during the previous year and but little call has arisen for extension of the water distribution system.

The only construction work of importance was the installation of a 6" main in the unpiped portion of Windsor street, in anticipation of the laying of permanent paving.

The right to lay a water pipe in Linden Place having been granted to the city by the abutting owners a 2" pipe was installed in place of the existing service pipe which was badly corroded and unserviceable.

In anticipation of the permanent paving of a portion of Linwood street the old 6" main was replaced with a 12" pipe between Congress place and Dix place, and side street branches, hydrant branches and service pipes in that section of the street were renewed.

A blow-off was constructed in Linwood street at the crossing of Poplar street; also one in Union square westerly from Stone avenue.

By order of the Board of Aldermen the large fire hydrant which has stood in the middle of Union square for many years was removed to make way for a monument to the veterans of the World War; a smaller hydrant has been substituted for the one removed and has been installed in the sidewalk westerly from Stone avenue.

Several fire hydrants have been broken by motor cars and trucks and bills for replacement have been rendered and collected.

Service installation has reached a very low point, only twenty-eight having been laid during the year; ten old ones were discontinued leaving a net increase of but ten services. Installation was in the following class of premises:

Church	1	Office building	1
Factories	2	Residences	5
Factory fire pipes	2	Stores	4
Garages	5	Warehouse; service and fire pipes combined	2
Gasoline filling station	1		
Laundry	1	Yards and shops	4

The service maintenance account is yearly growing as the older pipes become filled up with sediment and rust and during the summer season it requires two gangs to keep up with the demands for attention.

During the year we attended to and improved 1,185 cases of deficient service.

On account of inability to obtain the proper quality of labor we were obliged to slow down on water meter installation and at the end of the year we faced a deficiency of 246 in the number required for the city's installation under the State Meterage Act. Steps have been taken, however, to remedy this situation and before the end of another year we shall have caught up with our quota.

Water income for the year has shown a substantial increase, amounting to $262,666.34 as compared with $248,544.27 the previous year.

Department accounts show all bills contracted for payment during the year as settled and substantial unexpended balances at the closing of the books.

Labor

The only change in the wage rate was that of May 2 when wages were advanced by the mayor 25 cents a day, making the rate for common labor $4.00 a day and for skilled labor $4.10 a day; the same advance was granted to the foremen and meter readers.

Pensions

Two names have been added to the pension list during the year, viz: Patrick J. Bergin to date from May 20th at rate of $12.30 a week and John Brady to date from November 17 at rate of $12.00 a week. There are now six pensioners on the water department list.

Water Debt

A noteworthy event of the year was the extinguishment of the water debt, the last of the water loan bonds having been paid in October.

Bonds were issued at intervals from 1869 to 1896, the total amounting to $1,017,000; since the latter date the entire cost of maintenance and extension of the water-works system has been paid from the water income, together with the maturing bonds, interest charges, Metropolitan water assessments and other accounts.

Shop Improvements

I sincerely hope that some action may be taken during the coming year toward improving the working conditions at our shop. None of the changes that I recommended last year have been carried out and we are still handicapped by lack of proper facilities to carry on our necessary and ever-increasing repair work; this can and should be remedied at an early date.

Respectfully submitted,

Frank E. Merrill,

Water Commissioner.

Street Mains, Gates, Hydrants, Etc., Laid, Set, and Removed in 1920.

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		REMOVED.		SET.		RE-MOV'D		SET.		REMOVED		SET.		RE-MOV'D		SET.	RE-MOV'D
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size	No	No.	No.
Allen Street	Hydrant replacement: 9 ft north from Charlestown Street	6"	4	6"	6					6"	Co.	6"	Ch.						
	Gate on hydrant branch: 9 ft north from north line of Charlestown St., 2 ft 6 in. out from hydrant					6"	Ren.												
Cameron Ave.	Hydrant replacement: opposite Mead Street									6"	Co.	6"	Hol.						
	Gate on hydrant branch: Opposite Mead St., 4 ft out from hydrant					6"	Smith												
Cedar Street	Hydrant replacement: 50 ft north from Clyde Street									6"	Co.	6"	Hol G						
	Gate on hydrant branch: 50 ft north from Clyde St., 3 ft out from hydrant					6"	Ren.												
Central Street	Hydrant removal: 127 ft north from Vernon St.											6"	Mat.						
	Hydrant: 132 ft north from Vernon Street	6"	4							6"	Ch.								
	Gate on hydrant branch: 132 ft north from north line of Vernon St., 2 ft 6 in. out from hydrant					6"	Ren.												
Congress Place	Replaced street main: From connection with 12" gate on west line of Linwood St. to connection with new 12" main in Linwood St.	12"	9	6"	9														
Cooney Street	Hydrant replacement: 97 ft east from Line St.	6"	3	4"	3					6"	Co.	4"	B.M.						
	Gate on hydrant branch: 97 ft east from east line of Cooney St., 3 ft out from hydrant					6"	Ren.												
Dane Street	Gate on hydrant branch: 9 ft south from Tyler St., 4 ft out from hydrant					6"	Ren.												
Day Street	Hydrant replacement: 4 ft from Orchard Street									6"	Co.	6"	Ch.						
	Gate on hydrant branch: 4 ft north from north line of Orchard St., 4 ft out from hydrant					6"	Ren.												
Jaques Street	Hydrant replacement: 9 ft west from Fellsway West	6"	3	4"	3					6"	Mat.	4"	B.M.						
	Gate on hydrant branch: 9 ft west from Fellsway West, 4 ft out from hydrant					6"	Ren.												
Kilby Street	Hydrant removal: 172 ft south from Somerville Ave.											6"	Cof.						
	Hydrant: 176 ft south from Somerville Ave.									6"	Cof.								
	Gate on hydrant branch: 173 ft south from south line of Somerville Ave., 3 ft out from hydrant					6"	Ren.												

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		REMOVED.		SET.		REMOVED		SET.		REMOVED		SET.		RE-MOV'D		SET.	RE-MOV'D
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Laurel Street	Hydrant replacement: 49 ft north from Greene Street	6"	6	6"	6					6"	Co.	4"	Big.						
	Gate on hydrant branch: 49 ft north from north line of Greene St., 4 ft out from hydrant					6"	Ren.												
Linden Place	Replaced street main: From connection with main in Linden Ave. to point 126 ft west from west line of Linden Ave.	2"	139	1"	139	2"	Ch.	1"											
Linehan Court	Replaced street main: From connection at point 6 ft east from east line of Linwood St. to connection with 12" main in Linwood St.	6"	32	1"	32														
	Gate: On east line of Linwood St. 4 ft north from south line of Linehan Court					6"	Smith	1"											
Linwood Place	Replaced street main: From connection with 4" gate 3 ft east from west line of Linwood St. to connection with 12" main in Linwood St.	4"	8	1"	8														
	Gate: 56 ft north from north line of Congress Place and 7 ft east from west line of Linwood St.					4"	Smith	1"											
Linwood Street	Replaced street main: From connection with 6" main at point 7 ft 6 in south from south line of Congress Place to connection with 6" main at point 36 ft north from north line of Dix Place	12" 6"	600 4	6"	604														
	Blow-Off: 6 ft 6 in. south from north line of Poplar St. West and 28 ft east from west line of Linwood St.	4"	9			4"	Ren.							4"	1				
	Waterpost: 770 ft west from Poplar Street, (WP No. 36)			2"	10			2"	Ch.										1
	Hydrant removal: 2 ft south from Linwood Place			4"	9							4"	Hol G.						
	Hydrant: 48 ft north from Congress Place	6"	9							6"	Co.								
	Gate on hydrant branch: 48 ft north from Congress Place and 3 ft 6 in. out from hydrant					6"	Smith												
	Hydrant removal: 48 ft south from Lamson Court			4"	9							4"	Hol G.						
	Hydrant: 23 ft north from Dix Place	6"	9							6"	Co.								
	Gate on hydrant branch: 23 ft north from Dix Place and 2 ft 6 in. out from hydrant					6"	Ren												

Linwood Street	Hydrant: 14 ft south from Poplar Street	6"	9							6"	Co.	
	Gate on hydrant branch: 14 ft south from Poplar St. and 3 ft out from hydrant					6"	Smith					
Main Street	Hydrant replacement: 6 ft north from Moreland St.	6"	2	6"	2					6"	Co.	6" Hol.G.
	Gate on hydrant branch: 6 ft north from north line of Moreland St., 3 ft out from hydrant					6"	Smith					
Myrtle Street	Hydrant replacement: 463 ft north from Washington St.	6"	3	6"	3					6"	Co.	4" Hol.G.
	Gate on hydrant branch: 463 ft north-from north line of Washington St. 4 ft out from hydrant					6"	Ren.					
Mystic Ave.	Street main: From connection with 6 in main in Mystic Ave. at point 136 ft south from south line of Tenney Court to point 153 ft south from south line of Tenney Court	6"	17									
Orchard Street	Hydrant replacement: West corner of Milton St.									6"	Co.	6" Hol.G.
	Gate on hydrant branch: On west line of Milton St., 4 ft out from hydrant					6"	Smith					
Pearl Street	Hydrant replacement: 16 ft east from Hillside Ave.	6"	5	6"	5					6"	Co.	6" Hol C.
	Gate on hydrant branch: 16 ft east from west line of Hillside Ave., 2 ft out from hydrant					6"	Ren					
Poplar Street East	Replaced street main: From connection with 6 in main in Poplar St. East at point 11 ft east from east line of Linwood St. to connection with 12 in. main in Linwood St.	10"	36	4" 6"	30 6							
	Gate replacement: On east line of Linwood St. and 11 ft 8 in. north from south line of Poplar Street East					10"	Ren.	6"	Ch.			
Poplar Street West	Replaced street main: From connection with 6 in. main in Poplar St. West at point 8 ft west from west line of Linwood St. to connection with 12 in. main in Linwood St.	10"	24	4" 6"	18 6							
	Gate replacement: On west line of Linwood St., 10 ft north from south line of Poplar St. West.					10"	Ren.	6"	Ch.			
Putnam Street	Hydrant replacement: 608 ft north from north line of Summer St.									6"	Co.	6" Hol.G.
	Gate on hydrant branch: 608 ft north from north line of Summer St., 4 ft out from hydrant					6"	Smith					
South Street	Hydrant removal: 80 ft west from Willow Place.											6" Ch.
	Hydrant: 1 ft west from west line of Water Street	6"	5							6"	Ch	
	Gate on hydrant branch: 3 ft north from south line of South St. and 1 ft east from west line of Water St., 2 ft out from hydrant					6"	Ren.					
Summer Street	Waterpost: 32 ft east from Cedar Street (WP No. 69)			2"	8			2"	Ch.			
Union Square	Hydrant removal: Centre of Union Square			8"	50			8"	Cof.			8" Hol.G.
	Hydrant: North side of Union Square 64 ft west from Stone Ave.	10" 6"	2 7							6"	Co	

STREET	DESCRIPTION	PIPES				GATES.				HYDRANTS				BLOW-OFFS.				WATER POSTS.	
		LAID.		REMOVED.		SET.		REMOVED		SET.		REMOVED		SET.		RE-MOV'D		SET.	RE-MOV'D
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Union Square	Gate on hydrant branch: North side of Union Square, 64 ft from Stone Ave. 4 ft out from hydrant					6"	Ren.												
	Blow-Off: 52 ft west from west line of Stone Ave. and 23 ft 6 in south from north line of Union Square.	4"	4			4"	Smith							4"	1				
Webster Street	Hydrant replacement: 25 ft east from Cross Street									6"	Ch.	6"	Ch.						
	Gate on hydrant branch: 25 ft east from east line of Cross St., 2 ft 6 in. out from hydrant					6"	Ren.												
Washington Street	Hydrant replacement: 42 ft east from Durant Street									6"	Hol.G.	6"	Hol. C.						
	Gate on hydrant branch: 42 ft east from east line of Durant St. in sidewalk 1 ft 6 in. back from hydrant					6"	Ren.												
Windsor Street	Hydrant: 35 ft north from Cambridge city line at dead end of Windsor St. main	6"	25							6"	Co.								
	Gate on hydrant branch: 35 ft north from Cambridge city line, 4 ft out from hydrant					6"	Smith												
	Hydrant removal: 150 ft south from Glass House Court (Boynton Yard)			6"	8							6"	Co.						
	Hydrant: 214 ft south from Glass House Court (Boynton Yard)	6"	18							6"	Co.								
	Gate on hydrant branch: 214 ft south from south line of Glass House Court (Boynton Yard) 3 ft. out from hydrant					6"	Ren.												
	Street main: From connection with 6 in. main at point 250 ft south from south line of Glass House Court (Boynton Yard) to dead end, at point 35 ft north from Cambridge city line	6"	220																
	Street main: Connecting with old Middlesex Paper Co.'s pipe running through private land to Conlon Court	6"	6			6"	Smith												
			1222		974	32		8		23		21			2				2

Feet of pipe laid:	4" and under;	6";	8";	10";	12"	Total
	160	391	....	62	609	1222
Feet of pipe discontinued	269	655	50	....	....	974
Gates set	4	26	....	2	....	....
Gates discontinued	5	2	1	....	....	....
Hydrants set	....	23	....	....	....	....
Hydrants discontinued	6	14	1	....	....	....

Key:

Ren. — Rensselaer Valve Co.
Smith — A. P. Smith Mfg. Co.
Ch. — Chapman Valve Mfg. Co.
Cof. — Coffin Valve Co.
Hol. — Holyoke (Norwood Eng. Co.)
Co. — Corey (Rensselaer Valve Co.)
Mat. — Mathews (R. D. Wood & Co.)
B. M. — Boston Machine (Discontinued type)
Big — Bigelow
G — Gate type.
C — Compression type,

SUMMARY OF STATISTICS.
FOR THE YEAR ENDING DECEMBER 31, 1920.

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics.

Population, census 1920, 93,033; present, estimated 94,000.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water.

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1920, 94,000.
Population supplied, Dec. 31, 1920, 94,000.
Total consumption for the year, 2,626,906,000 gallons.
Average daily consumption, 7,177,300 gallons.
Gallons per day to each inhabitant, 77.

Statistics Relating to Distribution System, 1920.

MAINS.

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 1,222 feet; discontinued 974 feet; net extension, 248 feet.
Total now in use, 102.63 miles.
Number of hydrants added during year (public, 2; private, 0), 2.
Number of hydrants (public and private) now in use, 1,243.
Number of stop gates added during year, 24.
Number of stop gates now in use, 1,880.
Number of blow-offs, 185.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES.

Kind of pipe: Lead; wrought iron — lead-lined; wrought iron — cement-lined; cast iron.
Sizes, one-half to eight inches.
Extended 1,214 feet; discontinued 845 feet.
Total now in use, 88.55 miles.
Number of service taps added, 28; discontinued, 18; net increase, 10.
Number now in use, 13,554.
Number of meters added, 283; meters and motor registers discontinued, 133; net increase, 150.
Number now in use, 10.472.
Percentage of services metered, 76.26.
Percentage of water receipts from metered services, 84.
Number of motors and elevator registers added, 0; removed, 0.
Number now in use, 3 (included in number of meters).

FINANCIAL STATISTICS.

REVENUE.

From Water Rates:—		
Fixture rates . . .	$40,416 38	
Meter rates . . .	215,906 50	
Total from consumers .		$256,322 88
From other sources:—		
Water service assessments . . .		1,905 10
Labor and materials		4,438 36
Total		$262,666 34

EXPENDITURES.

Water Works Maintenance:—		
Operation (management, repairs and renewals) . . .	$61,306 77	
Special:—		
Miscellaneous accounts .	4,438 36	
Total		$65,745 13
Interest on bonds		80 00
Payment on bonds		2,000 00
Water Works Buildings . . .		986 64
Water Works Construction:—		
Mains	$2,423 72	
Services . . .	1,881 78	
Meters . . .	1,745 90	
Total construction		$6,051 40
Unclassified expenses:—		
Metropolitan water assessment . .		127,505 74
Balance: —		
Ordinary . . .	$60,297 43	
Total balance . .		60,297 43
Total		$262,666 34

Disposition of balance: applied to municipal purposes.

Cost of works to date	$1,079,248 19
Bonded debt at date	None

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Annual Report

of the

Water Commissioner

of the

City of Somerville
Massachusetts
1921

[48]

Somerville (Mass
VDLA

ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

Compliments of

FRANK E. MERRILL,

Water Commissioner.

SOMERVILLE PRESS PRINT
1922

SOMERVILLE WATER WORKS.

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS.

Settled, when part of Charlestown, 1630.
(Home of Colonial Governor John Winthrop).
Incorporated a town, 1842.
Established a city, 1872.

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet.
Highest building elevation in the city 145 feet.
Area of city, including land and water, about 4.22 square miles.
Land, 2,461.50 acres; water and marsh, 238.50 acres.
Population, 1920 census, 93,033.
Present population, estimated, 95,000.
Entire population on line of pipe and supplied with water.

Water works owned by City of Somerville.
Construction commenced in 1868.
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds.
High service 45 to 100 pounds.

Mayor.

HON. CHARLES W. ELDRIDGE

Water Commissioner.

FRANK E. MERRILL

Office of the Water Department.

Room 10, City Hall.

Department Buildings and Yard.

Cedar street, near Broadway.

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS:

1868 — 1871
SOMERVILLE MYSTIC WATER COMMITTEE (5)
Acts 1868; Chap. 202

1872 — 1890
SOMERVILLE MYSTIC WATER BOARD (5)
Acts 1871; Chap. 182

1891 — 1897
SOMERVILLE MYSTIC WATER BOARD (3)
Acts 1890; Chap. 218

1898 — 1899
BOARD OF WATER COMMISSIONERS (3)
Acts 1898; Chap. 33

1900 —
WATER COMMISSIONER (1)
Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER.

OFFICE OF THE WATER COMMISSIONER,
January, 1922.

To His Honor, the Mayor, and the Board of Aldermen: —

I present herewith my report for the year ending December 31, 1921, this being the forty-eighth annual report of the water department and my twenty-second as water commissioner:

Revenue and Expenditures.

Water bills have been issued as follows: —

"Annual" water charges, amounting to				$38,716 75
"Additional" water charges, amounting to				1,147 10
"Metered" water charges, amounting to				218,857 65
				$258,721 50
Abatements and refunds on above charges:				
Changes from "Annual" to "Meter" basis,			$4,382 53	
Uncollectible			307 88	
Other reasons			231 29	
Carried forward for collection			70 69	
				4,992 39
Income from sale of water				$253,729 11
Receipts; water service assessments			$5,408 19	
Receipts; labor and materials sold: —				
Misc. accounts charged		$6,838 40		
Abatements:				
Uncollectible	$410 31			
Other reasons	16 23			
Carried forward	38 79			
		465 33		
			6,373 07	
				11,781 26
Total income of water works				$265,510 37

This amount was used as follows: —

For water works purposes: —

Under Control of the Water Commissioner.

Water Works Maintenance	$60,987 29	
Water Works extension	15,958 54	
Miscellaneous accounts	6,373 07	
		$83,318 90

Not Under Control of the Water Commissioner.

Metropolitan water works assessment .	$133,989 84	
Maintenance water works buildings .	2,442 93	
		$136,432 77

For other municipal purposes: —

Not Under Control of the Water Commissioner.

Surplus	$45,758 70
	$265,510 37

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements.

WATER MAINTENANCE ACCOUNT.

Appropriations made by Board of Aldermen .			$68,875 00
Credit on refund	$ 75		
Credit on materials exchanged .	440 00		
			440 75
Department accounts; receipts . . .			550 63
Water works extension account; receipts .			12,294 13
Amount expended for labor and materials for operation, maintenance, and renewal of the water works		$60,987 29	
Amount expended for materials used in extension of the water works . . .		12,294 13	
Miscellaneous accounts		6,373 07	
Labor and materials furnished municipal departments		550 63	
Refund and exchange; Contra . . .		440 75	
Transfer by Board of Aldermen to other departments		625 00	
Balance: Unexpended		889 64	
		$82,160 51	$82,160 51

WATER WORKS EXTENSION ACCOUNT.

Appropriations made by Board of Aldermen .		$16,100 00
Amount expended for labor and materials used in extension of the water works . .	$15,958 54	
Balance: unexpended	141 46	
	$16,100 00	$16,100 00

Cost of Water Works.

The total cost of water works on December 31, 1920, as represented by the expenditures from appropriations for water works extension was	$1,079,248 19
Expended during the year 1921, on extension account	15,958 54
Total expenditures, December 31, 1921 .	$1,095,206 73

Water Works Income from 1898 and its Distribution.

The water income and its distribution from 1898 to 1921, inclusive, is shown in the following table: —

Total water income		$5,665,709 55
Distribution: —		
Water Works Account.		
Water Works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$1,434,373 07	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments . .	2,277,789 74	
Maintenance Water Works buildings .	8,292 26	
		$4,081,030 07
Other Municipal Accounts.		
Various municipal departments through specific appropriations and general revenue account		$1,584,679 48
		$5,665,709 55

Water Distribution System — Construction.

STREET MAINS.

Approximate number of feet of street mains in the city, January 1, 1921, (including hydrant branches and blow-offs)		541,893
Feet of street mains laid in 1921	2,520	
Feet of hydrant branches laid in 1921 . . .	56	
Feet of blow-off branches laid in 1921 . . .	0	
Total feet of pipe laid	2,576	
Feet of pipe removed or replaced . . .	1,689	
Net increase in feet of pipe		887
Total approximate feet of pipe in the city . .		542,780
Total pipe mileage, approximately . . .		102.80

The sizes and lengths of pipe laid and discontinued are as follows: —

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
¾"	0	96	6"	354	1030
1"	81	33	8"	623	0
2"	285	483	10"	242	0
4"	0	47	12"	991	0

The pipes constructed and replaced during the year are as follows: —

	Size of Pipe	Feet Laid	Feet Discontinued	Size Discontinued
Constructed: —				
Broadway	8"	106		
Cady Ave.	8"	136		
Corinthian Road . . .	8"	249		
Jaques St.	10"	31		
	6"	7		
Miller St.	6"	33		
Sterling St.	8"	132		
Waverley St.	6"	22		
Woods Ave.	10"	211		
Replaced: —				
Eustis St.	6"	55	55	2"
Forest St.	6"	54	54	2"
Giles Park	2"	110	110	2"
Greenwood Terrace . .	6"	35	35	2"
Harvard Place	2"	175	175	2"
Lamson Court	1"	33	33	1"
Linwood St.	12"	511	511	6"
	12"	480	480	6"
Linwood Terrace . . .	1"	48	96	¾"
London St.	6"	38	38	4"
Prentiss St.	6"	54	54	2"
Hydrant branches, blow-off pipes and water-post connections		56	48	
		2576	1689	

Hydrants, Gates Etc.

Number of fire hydrants in city January 1, 1921		1,179
Number set during year	12	
Number removed during the year	9	
Net increase in number of hydrants . .		3
Total number of public fire hydrants . .		1,182

Number of private fire hydrants, January 1, 1921			64	
Number set by private companies during the year			0	
Total number of private fire hydrants receiving their supply from the city mains				64
Number of gates in city, January 1, 1921			1,880	
Number set during the year for streets	5			
Number of section gates set	3			
Number set on hydrant branches	15			
Number set on blow-off branches	0			
Number set on car-sprinkler connections	0			
		23		
Number of street gates removed	3			
Number of waterpost gates removed	0			
		3		
Net increase in number of gates			20	
Total number of gates in city				1,900
Number of check-valves in city				8
Number of blow-offs in city January 1, 1921			185	
Number added during the year			0	
Total number of blow-offs				185
Number of waterposts in city January 1, 1921			72	
Number removed during the year			0	
Total number of waterposts				72
Number of drinking fountains in city				8
Number of car-sprinkler connections in city				17

Water Services.

Number of services in city January 1, 1921 (approximately)		13,554	
Number laid during the year	84		
Number permanently discontinued	7		
Net increase in services		77	
Total number of water services in city			13,631
Amount received for services laid in 1921			$5,408 19
Number feet service pipe in city January 1, 1921 (city and private) approximately		467,546	
Number feet laid during the year	3,107		
Number feet discontinued	208		
Increase in feet of service pipe		2,899	
Total feet service pipe (city and private) (approximately)			470,445
Total service mileage (approximately)			89.1

Size, number and length of services installed in 1921:

10-⅝"-446′ 52-¾"-1839′ 10-1"-488′ 5-2"-109′ 3-4"-99′ 4-6"-126′

Number of fire services installed during 1921 (Included in above)	8

Location of Fire Services	No.	Size
Beacon St., No. 10 — Winchester Mfg. Co. .	1	6"
Broadway — Clarendon Hill Sta., B. E. Ry. .	1	6"
Central St. — Central Theatre . . .	1	2"
Central St. — Central Theatre . . .	1	4"
Clarendon Ave. — Teele Sq. Theatre . .	1	4"
Roland St. — Masury, Young Co. . . .	1	4"
Somerville Ave., No. 37 — Rapids Furniture Co.	1	6"
Vine St., No. 21 — Conant Bros. Factory .	1	6"

Water Meters.

Number of water meters in city, January 1, 1921 .		10,472
Number installed during the year, new . . .	723	
Number reset	70	
	793	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	75	
Net increase in number of operating meters . .		718
Total number of meters in service		11,190
Number of motor registers (included in above) .		3
Per cent. of all services metered		82.11

Operating Meters December 31, 1921.

Size	⅝"	¾"	1"	1½"	2"	3"	4"	6"	Total
No.	10,764	274	90	18	23	11	6	1	11,187
Motor and elevator registers									3
									11,190

The meters installed in 1921 were classed as follows:—

Applications of property owners	79
New services	60
General installation	584
Reset	70
Total	793

Meters were removed for the following causes:—

Vacancies and temporary non-use of water . . .	51
Services permanently discontinued	5
Replaced by other meters	19
Total	75

Meters installed yearly on old and new services under the State Compulsory Meterage law, which requires complete meterage of city by the year 1928: —

Year	Average installation required on old services	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	411	755	344	344	147
1909	411	637	226	570	201
1910	411	501	90	660	169
1911	411	528	117	777	200
1912	411	423	12	789	236
1913	411	432	21	810	255
1914	411	422	11	821	231
1915	411	439	28	849	217
1916	411	434	23	872	203
1917	411	163	248 (less)*	624	154
1918	411	82	329 (less)*	295	39
1919	411	166	245 (less)*	50	23
1920	411	115	296 (less)*	246†	45
1921	411	663	6	6	60

* On account of war-time conditions of labor and material.
† Deficiency.

The following table shows the progress of meter installation of Somerville by years and the results therefrom in water consumption:

Year	Population	Number of Services	Number of Meters	Per Cent Metered		Per Capita Consumption
1897	58,000	9,601	....	....	(Est.)	88
1898	59,000	9,806	143	1.5	"	88
1899	61,000	10,052	226	2.25	"	88
1900	62,000	10,291	202	2	"	88
1901	64,000	10,520	224	2	"	88
1902	66,000	10,710	269	2.5	"	88
1903	68,000	10,854	647	6	"	88
1904	69,000	11,059	1,272	11.5	Met.	89
1905	70,000	11,279	2,092	18.5	"	89
1906	71,000	11,489	2,829	24.5	"	89
1907	72,000	11,662	3,455	29.5	"	90
1908	74,000	11,817	4,333	36.5	"	89
1909	76,000	12,018	5,155	43	"	84
1910	78,000	12,149	5,817	48	"	80
1911	79,000	12,357	6,533	53	"	74
1912	80,000	12,596	7,171	57	"	79
1913	82,000	12,827	7,856	61	"	72
1914	85,000	13,034	8,499	65	"	73
1915	87,000	13,233	9,155	69	"	67
1916	90,000	13,420	9,763	72.75	"	69
1917	91,000	13,509	10,028	74.23	"	73
1918	91,000	13,514	10,116	74.86	"	80
1919	92,000	13,544	10,322	76.21	"	69
1920 Census	93,033	13,554	10,472	77.26	"	77
1921	95,000	13,631	11,190	82.11	"	73

Summary of Pipes and Fixtures of the Water System

December 31, 1921.

Feet of main pipe (approximately)	542,780
Feet of service pipe (approximately)	470,445
Service connections (approximately)	13,631
Public fire hydrants	1,182
Private fire hydrants	64
Gates	1,900
Check Valves	8
Meters	11,190
Motor registers	3
Waterposts	72
Car-sprinkler connections	17
Blow-offs	185
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION.

The annual assessments paid by this city as its proportionate part of the cost and operation of the Metropolitan water works are given below: —

Year	Sinking Fund	Maintenance	Interest	Maturing Bonds	Total
1898........	No division made				$14,250 19
1899........	" "	"			20,975 58
1900........	" "	"			28,689 24
1901........	$12,491 73	$12,033 79	$32,291 24		56,816 76
1902........	19,014 85	12,955 64	30,427 40		62,397 89
1903........	15,748 56	12,763 10	48,776 77		77,288 43
1904........	16,404 42	15,393 87	54,938 64		86,736 93
1905........	21,358 11	13,666 71	55,535 91		90,560 73
1906........	22,345 50	17,412 51	57,402 07		97,160 08
1907........	25,365 30	18,880 01	62,089 30		106,334 61
1908........	24,865 73	15,221 12	68,604 23		108,691 08
1909........	24,812 23	21,220 56	66,540 41		112,573 20
1910........	25,018 52	18,212 28	66,825 45		110,056 25
1911........	25,424 55	19,573 82	69,849 26	$246 66	115,094 29
1912........	24,469 82	16,111 70	68,205 16	445 46	109,232 14
1913........	24,930 94	20,691 19	70,206 83	491 92	116,320 88
1914........	14,190 98	22,488 71	73,138 81	180 63	109,999 13
1915........	14,164 65	21,376 07	74,111 12	1,129 50	110,781 34
1916........	13,249 71	21,643 98	74,058 98	1,515 62	110,468 29
1917........	13,364 71	28,110 19	75,117 17	1,833 60	118,425 67
1918........	14,193 89	29,185 04	79,975 44	2,004 18	125,358 55
1919........	13,765 81	33,723 64	78,335 58	2,257 87	128,082 90
1920........	12,559 45	37,814 68	74,903 80	2,227 81	127,505 74
1921........	11,956 69	43,942 28	75,848 98	2,241 89	133,989 84
					$2,277,789 74

There has been credited to the city by the commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district, and water furnished to water companies the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1921: —

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	7,272,500	77	July	6,999,800	73
February	6,881,800	73	August	6,971,300	73
March	6,625,400	70	September	7,141,200	75
April	6,390,700	67	October	6,847,600	72
May	6,590,000	69	November	6,746,600	70
June	7,507,700	79	December	7,057,700	73

The consumption for the year was: —

Low-service system	1,968,524,000 gallons
High-service system	557,049,000 gallons
Total consumption	2,525,573,000 gallons
Average daily consumption	6,919,400 gallons
Average daily consumption, per capita, for Somerville	73 gallons
Average daily consumption, per capita, for Metropolitan district	95 gallons

The following table shows the daily per capita consumption of water in the cities and town in the Metropolitan Water District for the year 1921, as registered by the Metropolitan meters.

City or Town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	51	51	49	50	54	86	56	63	68	58	49	52	57
Belmont	51	52	53	54	59	98	60	63	69	55	52	50	60
Boston	126	119	113	106	109	112	110	109	112	109	105	111	112
Chelsea	71	69	68	65	67	72	70	71	74	71	68	75	70
Everett	91	87	87	82	83	89	82	86	86	86	81	85	86
Lexington	59	59	63	62	65	90	68	74	74	69	64	63	68
Malden	52	47	46	46	47	54	50	49	51	51	48	48	49
Medford	43	40	41	42	45	51	45	49	46	44	47	47	45
Melrose	55	51	51	54	57	72	60	59	62	56	55	57	57
Milton	42	42	42	42	42	49	39	37	42	45	43	41	42
Nahant	87	95	70	78	111	270	209	230	218	103	57	56	132
Quincy	86	85	83	82	85	95	90	90	89	86	81	85	86
Revere	61	61	55	56	60	74	73	79	74	65	57	61	65
Somerville	77	73	70	67	69	79	73	73	75	72	70	73	73
Stoneham	85	83	78	78	74	84	79	81	77	75	65	60	76
Swampscott	70	68	67	66	80	127	105	114	108	92	78	59	86
Watertown	68	64	67	76	83	82	73	84	80	71	71	75	75
Winthrop	51	49	49	49	50	64	65	64	58	51	50	50	54
Met. Dist.	103	98	94	90	92	99	94	95	97	93	89	94	95

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1921: —

City of Town	Gallons Total per Day	Gallons Per Capita per Day	Per. Cent. Services Metered
Milton	402,600	42	100
Medford	1,853,900	45	100
Malden	2,468,700	49	97
Winthrop	873,000	54	99
Melrose	1,064,700	57	99
Arlington	1,100,300	57	100
Belmont	678,300	60	100
Revere	1,958,600	65	80
Lexington	441,700	68	99
Chelsea	3,101,300	70	99
Somerville	6,919,400	73	82
Watertown	1,624,400	75	100
Stoneham	610,400	76	79
Everett	3,530,600	86	71
Quincy	4,269,500	86	91
Swampscott	718,800	86	100
Boston	85,609,200	112	62
Nahant	182,100	132	75
Total District	117,407,400	95	75

Construction — Maintenance — Operation.

Building operations were quiet during the first half of the year; toward the close, however, renewed activity manifested itself and many new houses were erected, calling for service installation and, in some cases, short extensions of the street mains.

Further portions of Linwood street were paved during the year and 12" water pipe was laid in advance of the pavers in place of the old 6" pipe from Congress Place to a connection with Fitchburg street, and from a point near Dix Place northerly for about 480 feet. In London street, at the same time, 38 feet of old 4" pipe was replaced with 6" pipe and the small pipe in Lamson Court was replaced with new; also a part of the old supply to Linwood Terrace was renewed.

In Harvard Place the old 2" galvanized pipe was replaced with the same size of lead-lined pipe ,and in Giles Park 110 feet of old pipe was similarly treated.

Construction work was carried on in Broadway, north side, from Pennsylvania Avenue easterly; in Cady Avenue from point near Simpson Avenue westerly to Corinthian Road; in Corinthian Road from point near Broadway, southerly; in Jaques street to connect with Bond street main; in Miller street, a connection with Beacon street; in Sterling street, to supply new houses being erected; in Waverley street to provide a connection for main in Roland street, and in Woods Avenue in anticipation of building operations.

Twenty additional gates were installed in street mains and hydrant branches; twelve fire hydrants were set and nine were removed.

A large increase in service installation developed in the later part of the year and altogether 84 services were laid and 7 were discontinued.

Class of Premises Covered by Service Installation.

Apartment buildings	1
Barrel yard	1
Bottling business	1
Car station; fire pipe	1
Factory	1
Factory; fire pipe	2
Factory; fire and service combination	1
Garages	8
Gas filling station	1
Junk yard	1
Laundry	1
Lunch cart	1
Milk station	1
Residences	54
Stores	2
Storage warehouse	1
Storage warehouse; fire pipe	1
Tenements and stores; blocks	2
Theatre; fire pipes	2
Theatre; fire and service combination	1

The low state of construction and reconstruction work afforded an opportunity to catch up with our meter installation requirements and we were able to wipe out our deficiency of the previous year and show an excess installation of six meters; a total of 723 meters having been set during the year on old and new services. At this time 82% of the services in the city are metered.

Water income for the year was $265,510.37; an increase of $2,844.03 over the previous year. All bills owed by the department were paid at the close of the year and the appropriation accounts showed an unexpended balance of $1,031.10.

The old high-service pump and boiler have finally been disposed of and removed from the department buildings but much remains yet to be done by the building department before we can realize any great benefit from these changes. A memorandum of our needs will be submitted for your consideration in the next budget. A new steam-heating plant has been installed and so far has given ample warmth to the buildings.

A great improvement has been made in our motor equipment by the favorable purchase of two new Kissel one-ton trucks to replace old trucks which had become practically unfit for further use. With the early purchase of one more truck our teaming outfit will be good for another year.

My thanks are expressed to the retiring mayor, Hon. Charles W. Eldridge, for many courtesies shown me during his term of office, and to all officials and employees of the city who have co-operated with me in carrying on the various branches of our department work.

Respectfully submitted,

FRANK E. MERRILL,

Water Commissioner.

Street Mains, Gates, Hydrants, Etc., Laid, Set, and Removed in 1921.

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		REMOVED.		SET.		RE-MOV'D		SET.		REMOVED		SET.		RE-MOV'D		SET.	RE-MOV'D
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Beacon Street	Gate on Hydrant branch: 314 ft. west from west line of Greenwood Terrace, 4 ft. out from hydrant.					6"	Ren.												
	Gate on Hydrant branch: 10 ft. east from east line of Stanford Terrace, 4 ft. out from hydrant.					6"	Ren.												
	Section Gate: On south line of Greenwood Terrace and 21 ft. west from east line of Beacon Street.					6"	Ren.												
Bennett Street	Hydrant removal: 160 ft. east from Prospect Street.			6"	20							6"	Chap.						
	Hydrant: 9 ft east from Prospect Street.	6"	8							6"	Chap.								
	Gate on Hydrant branch: 9 ft east from Prospect Street, 4 ft out from hydrant.					6"	Smith												
Boston Street	Gate: On east line of Bigelow Street, 14 ft north from south line of Boston Street.					6"	Ren.												
Broadway	Street main: From connection with main pipe in Pennsylvania Ave. to point 71 ft east from Pennsylvania Avenue.	8"	106																
	Hydrant: 58 ft east from Pennsylvania Avenue.	6"	3							6"	Chap.								
	Gate on Hydrant branch: 58 ft east from Pennsylvania Ave. in sidewalk 2 ft from hydrant.					6"	Ren.												
Cady Avenue	Street main: From connection with main pipe in Cady Avenue at point 12 ft west from west line of Simpson Ave. to point 148 ft west from west line of Simpson Avenue.	8"	136																
City Road	Hydrant replacement: 68 ft south from Roberts Street.									6"	Holy	4"	B.M.						
	Gate on Hydrant branch: 68 ft south from Roberts Street and 3 ft out from hydrant.					6"	Ren.												
Corinthian Road	Street main: From connection with main in Corinthian Road at point 82 ft south from Broadway to point 331 ft south from Broadway.	8"	249																
	Hydrant: 167 ft south from Broadway.	6"	7							6"	Corey								
	Gate on Hydrant branch: 167 ft south from Broadway and 5 ft 6 ins. out from hydrant.					6"	Wood												

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		REMOVED.		SET.		REMOVED		SET.		REMOVED		SET.		RE-MOV'D		SET	RE-MOV'D
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Eustis Street	Replaced Street main: From connection with main in Beacon St., to point 9 ft west from west line of Beacon Street.	6"	55	2"	55	6"	Ren.	2"											
Fitchburg Street	Hydrant replacement: 395 ft east from Linwood Street.									6"	Hol. C.	4"	Hol. G						
	Gate on Hydrant branch: 395 ft east from east line of Linwood Street, 3 ft out from hydrant.					4"	Smith												
Florence Street	Hydrant replacement: 453 ft north from Washington Street.									6"	Mat.	4"	B. M.						
	Gate on Hydrant branch: 453 ft north from Washington Street and 3 ft 6 ins. out from hydrant					6"	Ren.												
Forest Street	Replaced Street main: From connection with main pipe in Beacon Street to point 6 ft west from west line of Beacon Street.	6"	54	2"	54														
Franklin Street	Hydrant replacement: 87 ft south from Palmer Avenue.	6"	3	6"	3					6"	Mat	6"	Chap.						
	Gate on Hydrant branch: 87 ft south from Palmer Avenue and 3 ft out from hydrant.					6"	Chap.												
Giles Park	Replaced Street main: From Walnut Street main to point 83 ft west from Walnut Street.	2"	110	2"	110														
Greenwood Terrace	Replaced Street main: From connection with 6" main in Beacon Street to point 13 ft east from east line of Beacon Street.	6"	85	2"	85	6"	Ren	2"	Chap.										
Harvard Place	Replaced Street main: From connection with main in Harvard Street to point 160 ft west from west line of Harvard Street.	2"	175	2"	175														
Jaques Street	Street main: From connection with 10" main in Jaques Street near west line of Bond St. to connection with 6" main in Jaques Street near east line of Bond Street.	10" 6"	81 7																
Lamson Court	Replaced Street main: From connection with main in Linwood Street to 2" gate on east line of Linwood Street.	1"	33	1"	33	2"		2"											

Linwood Street	Replaced Street main: From connection with 12" main at point 7 ft 6 in. south from Congress Place to connection with 12" main at point opposite north line of Fitchburg Street.	12"	511	6"	511													
	Replaced Street main: From connection with 12" main at point 36 ft north from Dix Place to 12" gate set at point 492 ft south from Washington Street and 12 ft north from south line of house No. 144.	12"	480	6"	480													
	Section gate: 492 ft south from Washington Street or 277 ft north from north line of Linwood Terrace and 16 ft 8 ins. east from west line of Linwood Street.					12"	Chap.											
	Replaced Hydrant branch: 52 ft south from London Street.	6"	9	4"	9													
	Gate on Hydrant branch: 52 ft south from London Street 7 ft 6 ins. out from hydrant.					6"	Ren.											
	Replaced Hydrant branch: 125 ft north from London Street.	6"	6	6"	6													
	Gate on Hydrant branch: 125 ft north from London Street, 4 ft out from hydrant.					6"	Ren.											
	Replaced part of Hydrant Branch: 12 ft north from Linwood Terrace.	6"	6	6"	6													
	Gate on Hydrant branch: 12 ft north from Linwood Terrace, 4 ft out from hydrant.					6"	Ren.											
Linwood Terrace	Replaced Street main: From connection with main in Linwood Street to point 15 ft east from east line of Linwood Street.	1"	48	3 4"	96	1"												
London Street	Replaced Street main: From connection with main in Linwood Street to point 5 ft east from east line of London Street.	6"	38	4"	38													
Miller St. Ext.	Street main: From connection with 6" main in Beacon Street to point 12 ft east from east line of Beacon Street.	6"	33			6"	Ren.											
Prentiss Street	Replaced Street main: From connection with main in Beacon Street to point 9 ft west from Beacon St.	6"	54	2"	54													
Roland Street	Street main: Set 12x12x6" Tee 13 ft 4 ins. south from north line of Roland Street and 11 ft east from west line of Waverley St. (East end of tee is connected to a 4" Factory and Fire Service with 4" gate on east line of Waverley Street, for Masury-Young Co. West end of tee is plugged.)																	

Street	Description	Pipes				Gates.				Hydrants				Blow-offs.				Water Posts.	
		Laid.		Removed.		Set.		Removed		Set.		Removed		Set.		Re-mov'd		Set.	Re-mov'd
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Sterling Street	Street main: From connection with main pipe in Sterling Street at west line of North Street to point 132 ft west from west line of North Street.	8"	132																
Victoria Street	Hydrant replacement: 256 ft. south from south line of Broadway.	6"	4	6"	4					6"	Mat.	6"	Hol. C.						
	Gate on Hydrant branch: 256 ft south from south line of Broadway and 4 ft out from hydrant.					6"	Ren.												
Walnut Street	Hydrant replacement: Opposite Radcliffe Road.	6"	3							6"	Chap.	6"	Corey						
	Gate on Hydrant branch: Opposite Radcliffe Road, in sidewalk 3 ft north from hydrant.					6"	Ren.												
	Hydrant replacement: Opposite Radcliffe Road. (second replacement.)									6"	Chap.	6"	Chap.						
Waverley Street	Street main: From connection with main in Waverley Street at point 9 ft north from Roland Street to connection with 12x12x6" tee in Roland Street at point 13 ft., 4 ins south from north line of Roland Street.	6"	22																
Webster Avenue	Hydrant replacement: 1 ft north from Beach Avenue.									6"	Mat.	6"	Mat.						
Woods Avenue	Street main: From connection with 10" main in Woods Ave. at west line of North Street to point 211 ft west from North Street.	10"	211																
	Hydrant: 177½ ft west from North Street.	6"	7							6"	Corey								
	Gate on Hydrant branch: 177½ ft west from North Street.					6"	Chap.												
			2576		1689	23		3		12"		9							

SUMMARY OF STATISTICS.

FOR THE YEAR ENDING DECEMBER 31, 1921.

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics.

Population, census 1920, 93,033; present, estimated 95,000.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water.

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1921, 95,000.
Population supplied, Dec. 31, 1921, 95,000.
Total consumption for the year, 2,525,573,000 gallons.
Average daily consumption, 6,919,400 gallons.
Gallons per day to each inhabitant, 73.

Statistics Relating to Distribution System, 1921.

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 2.576 feet; discontinued 1,689 feet; net extension, 887 feet.
Total now in use, 102.80 miles.
Number of hydrants added during year (public, 3; private, 0),3.
Number of hydrants (public and private) now in use, 1,246.
Number of stop gates added during year, 20.
Number of stop gates now in use, 1,900.
Number of blow-offs, 185.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron.
Sizes, one-half to eight inches.
Extended 3,107 feet; discontinued 208 feet.
Total now in use 89.1 miles
Number of service taps added, 84; discontinued, 7; increase, 77.
Number now in use, 13,631.
Number of meters added, 793; meters and motor registers discontinued, 75; net increase, 718.
Number now in use, 11,190.
Percentage of services metered, 82.11.
Percentage of water receipts from metered services, 86.
Number of motors and elevator registers added, 0; removed, 0.
Number now in use, 3 (included in number of meters).

FINANCIAL STATISTICS.

REVENUE.

From Water Rates:—		
Fixtures rates . .	$35,020 13	
Meter rates . . .	218,708 98	
Total from consumers .		$253,729 11
From other sources: —		
Water service assessments . . .		5,408 19
Labor and materials		6,373 07
Total		$265,510 37

EXPENDITURES.

Water Works Maintenance: —		
Operation (Management, repairs and renewals) . . .	$60,987 29	
Special: —		
Miscellaneous accounts .	6,373 07	
Total		$67,360 36
Water Works Buildings . . .		2,442 98
Water Works Construction: —		
Mains	$4,207 04	
Services	4,898 62	
Meters	6,852 88	
Total construction		$15,958 54
Metropolitan water assessment . .		133,989 84
Balance		45,758 70
Total		$265,510 37

Disposition of balance: applied to municipal purposes.

Cost of works to date	$1,095,206 73
Bonded debt at date	None

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Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1922

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ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

TTS

1922

Compliments of

FRANK E. MERRILL,

Water Commissioner.

Somerville Press Print
1923.

SOMERVILLE WATER WORKS.

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS.

Settled, when part of Charlestown, 1630.
(Home of Colonial Governor John Winthrop).
Incorporated a town, 1842.
Established a city, 1872.

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet.
Highest building elevation in the city 145 feet.
Area of city, including land and water, about 4.22 square miles.
Land, 2,461.50 acres; water and marsh, 238.50 acres.
Population, 1920 census, 93,033.
Present population, estimated, 96,000.
Entire population on line of pipe and supplied with water.

Water works owned by City of Somerville.
Construction commenced in 1868.
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds.
High service 45 to 100 pounds.

Mayor.

Hon. John M. Webster

Water Commissioner.

Frank E. Merrill

Office of the Water Department.

Room 10, City Hall.

Department Buildings and Yard.

Cedar street, near Broadway.

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Present population, estimated, 96,000.
Entire population on line of pipe and supplied with water.

Water works owned by City of Somerville.
Construction commenced in 1868.
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds.
High service 45 to 100 pounds.

Mayor.

HON. JOHN M. WEBSTER

Water Commissioner.

FRANK E. MERRILL

Office of the Water Department.

Room 10, City Hall.

Department Buildings and Yard.

Cedar street, near Broadway.

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS:

1868 — 1871
SOMERVILLE MYSTIC WATER COMMITTEE (5)
Acts 1868; Chap. 202

1872 — 1890
SOMERVILLE MYSTIC WATER BOARD (5)
Acts 1871; Chap. 182

1891 — 1897
SOMERVILLE MYSTIC WATER BOARD (3)
Acts 1890; Chap. 218.

1898 — 1899
BOARD OF WATER COMMISSIONERS (3)
Acts 1898; Chap. 33

1900 —
WATER COMMISSIONER (1)
Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER.

Office of the Water Commissioner,
January, 1923.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1922, this being the forty-ninth annual report of the water department and my twenty-third as water commissioner:

Revenue and Expenditures.

Water bills have been issued as follows:—

"Annual" water charges, amounting to				$28,121 25
"Additional" water charges, amounting to . . .				1,241 06
"Metered" water charges, amounting to				241,859 36
				$271,221 67
Abatements and refunds on above charges:				
Changes from "Annual" to "Meter" basis, ...			$455 23	
Uncollectible			75 48	
Other reasons			603 00	
Carried forward for collection . .			179 55	
				1,313 26
Income from sale of water . . .				$269,908 41
Receipts; water service assessments .			$9,674 58	
Receipts; labor and materials sold:—				
Misc. accounts charged .		$4,991 15		
Abatements:				
Uncollectible .	$8 87			
Other reasons .	27 81			
Carried forw'd	410 84			
		447 52		
			4,543 63	
				14,218 21
Total income of water works . .				$284,126 62

This amount was used as follows:—

For water works purposes:—

Under Control of the Water Commissioner.

Water Works Maintenance	$69,464 05		
Water Works extension .	32,539 92		
Miscellaneous accounts .	4,543 63		
		$106,547 60	
			$106,547 60

Brought forward		$106,547 60

Not Under Control of the Water Commissioner.

Metropolitan water works assessment .	$128,207 84	
Maintenance water works buildings .	1,324 84	
		$129,532 68

For other municipal purposes:—

Not Under Control of the Water Commissioner.

Surplus	$48,046 34
Total	$284,126 62

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements.

WATER MAINTENANCE ACCOUNT.

Appropriations made by Board of Aldermen .		$76,725 00
Department accounts; receipts . . .		1,255 63
Water works extension account; receipts .		20,755 75
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$69,464 05	
Amount expended for materials used in extension of the water works	20,755 75	
Miscellaneous accounts	4,543 63	
Labor and materials furnished municipal departments	1,255 63	
Balance: Unexpended	2,717 32	
	$98,736 38	$98,736.38

WATER WORKS EXTENSION ACCOUNT.

Appropriations made by Board of Aldermen .		$35,500 00
Amount expended for labor and materials used in extension of the water works . .	$32,539 92	
Balance: unexpended	2,960 08	
	$35,500 00	$35,500 00

Cost of Water Works.

The total cost of water works on December 31, 1921, as represented by the expenditures from appropriations for water works extension was	$1,095,206 73
Expended during the year 1922, on extension account	$ 32,539 92
Total expenditures, December 31, 1922 .	$1,127,746 65

Water Works Income from 1898 and its Distribution.

The water income and its distribution from 1898 to 1922, inclusive, is shown in the following table: —

Total water income	$5,949,836 17
Distribution: —	

Water Works Account.

Water works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$1,540,920 67	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments . .	2,405,997 58	
Maintenance Water Works buildings .	9,617 10	
		$4,317,110 35

Other Municipal Accounts.

Various municipal departments through specific appropriations and general revenue account	$1,632,725 82
	$5,949,836 17

Water Distribution System — Construction.

STREET MAINS.

Approximate number of feet of street mains in the city, January 1, 1922, (including hydrant branches and blow-offs)		542,780
Feet of street mains laid in 1922	7,254	
Feet of hydrant branches laid in 1922 . . .	260	
Feet of blow-off branches laid in 1922 . . .	52	
Total feet of pipe laid	7,566	
Feet of pipe removed or replaced	674	
Net increase in feet of pipe		6,892
Total approximate feet of pipe in the city . .		549,672
Total pipe mileage, approximately		104.1

The sizes and lengths of pipe laid and discontinued are as follows: —

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
¾"	0	0	6"	482	529
1"	0	11	8"	2033	0
2"	87	124	10"	2014	0
4"	71	10	12"	2879	0

The pipes constructed and replaced during the year are as follows: —

	Size of Pipe	Feet Laid	Feet Discontinued	Size Discontinued
Constructed: —				
Alewife Brook Parkway .	12"	1479		
Boston Ave	10"	48		
Corinthian Road . . .	8"	242		
Cross St. East . . .	12"	40		
Curtis St.	6"	23		
Fairfax St.	8"	949		
High St.	12"	416		
Kensington Ave. . . .	12"	6		
Lewis St.	10"	362		
	2"	42		
Miller St.	6"	160		
Murray St.	6"	32		
Mystic Ave.	12"	382		
Parkdale St.	10"	491		
Pennsylvania Ave . . .	10"	166		
Rose St.	8"	8		
Sterling St.	8"	680		
Talbot Ave	12"	72		
Upland Road	8"	154		
Woods Ave	10"	947		
Replaced: —				
Bradford Ave	2"	18	18	2"
Chapel Court	2"	22	11	1"
			11	2"
Cottage Circle	4"	31	31	2"
Linwood St.	12"	484	484	6"
Hydrant branches, blow-off pipes and water-post connections		312	119	
		7,566	674	

Hydrants, Gates etc.

Number of fire hydrants in city January 1, 1922		1,182	
Number set during year	27		
Number removed during the year . . .	15		
Net increase in number of hydrants . .		12	
Total number of public fire hydrants .			1,194
Number of private fire hydrants, January 1, 1922		64	
Number added by revision of list . . .		2	
Total number of private fire hydrants receiving their supply from the city mains		66	

Number of gates in city, January 1, 1922 .			1,900
Number set during the year for streets . .	16		
Number of section gates set	11		
Number set on hydrant branches . . .	46		
Number set on blow-off branches . . .	6		
Number set on car-sprinkler connections .	0		
		79	
Number of street gates removed . . .	4		
Number of waterpost gates removed . .	5		
Number of blow-off gates removed . . .	1		
		10	
Net increase in number of gates . . .			69
Total number of gates in city . . .			1,969

Number of check-valves in city . . .			8

Number of blow-offs in city January 1, 1922 .		185	
Number added during the year . . .	6		
Number discontinued	1	5	
Total number of blow-offs			190

Number of waterposts in city January 1, 1922		72	
Number removed during the year . . .		6	
Total number of waterposts . . .			66

Number of drinking fountains in city . .			8

Number of car-sprinkler connections in city .			17

Water Services.

Number of services in city January 1, 1922 (approximately)		13,631	
Number laid during the year	221		
Number permanently discontinued . . .	8		
Net increase in services		213	
Total number of water services in city .			13,844
Amount received for services laid in 1922 .			$9,674 58
Number feet service pipe in city January 1, 1922 (city and private) approximately .			470,445
Number feet laid during the year . . .	7,708		
Number feet discontinued	348		
Increase in feet of service pipe . . .			7,360
Total feet service pipe (city and private) (approximately)			477,805
Total service mileage (approximately) .			90.5

Size, number and length of services installed in 1922: —

164-⅝"-5868' 35-¾"-1191' 11-1"-322' 3-1½"-75'
1-2"-27' 4-4"-150' 3-6"-75'

Number of fire services installed during 1922 (Included in above)	6

Location of Fire Services	No.	Size
Boynton Yard — Consolidated Paper Bag Co.	1	6"
Conlon Ct. Ext. — Marden-Wild Corporation	1	4"
Fitchburg St. — Sands, Taylor & Wood Co. .	1	4"
Grove St. No. 10 — Thos. H. Kingston . .	1	6"
Kent St., No. 29 — Camb. Color & Chem'al Co.	1	4"
Wash'gton St. — Youlden, Smith & Hopkins .	1	6"

Water Meters.

Number of water meters in city, January 1, 1923 .		11,190
Number installed during the year, new . . .	248	
Number reset	67	
Number added by revision of list	15	
	330	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	73	
Net increase in number of operating meters . .		257
Total number of meters in service		11,447
Number of motor registers (included in above) .		3
Per cent. of all services metered		82.68

Operating Meters December 31, 1922.

Size	⅝"	¾"	1"	1½"	2"	3"	4"	6"	Total
No.	11,002	286	98	18	24	8	7	1	11,444
Motor and elevator registers									3
									11,447

The meters installed in 1922 were classed as follows: —

Applications of property owners	20
New services	181
General installation	47
Reset	67
Revision of list	15
Total	330

Meters were removed for the following causes: —

Vacancies and temporary non-use of water . . .	44
Services permanently discontinued	12
Replaced by other meters	17
Total	73

Meters installed yearly on old and new services under the State Compulsory Meterage law, which requires complete meterage of city by the year 1928: —

	Average installation required on old services	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	411	755	344	344	147
1909	411	637	226	570	201
1910	411	501	90	660	169
1911	411	528	117	777	200
1912	411	423	12	789	236
1913	411	432	21	810	255
1914	411	422	11	821	231
1915	411	439	28	849	217
1916	411	434	23	872	203
1917	411	163	248†	624	154
1918	411	82	329†	295	39
1919	411	166	245†	50	23
1920	411	115	296†	246†	45
1921	411	663	6	6	60
1922	411	67	344†	338†	181

† Deficiency.

The following table shows the progress of meter installation of Somerville by years and the results therefrom in water consumption: —

Year	Population	Number of Services	Number of Meters	Per Cent Metered	Per Capita Consumption
1897	58,000	9,601	....	....	(Est.) 88
1898	59,000	9,806	143	1.5	" 88
1899	61,000	10,052	226	2.25	" 88
1900	62,000	10,291	202	2	" 88
1901	64,000	10,520	224	2	" 88
1902	66,000	10,710	269	2.5	" 88
1903	68,000	10,854	647	6	" 88
1904	69,000	11,059	1,272	11.5	Met. 89
1905	70,000	11,279	2,092	18.5	" 89
1906	71,000	11,489	2,829	24.5	" 89
1907	72,000	11,662	3,455	29.5	" 90
1908	74,000	11,817	4,333	36.5	" 89
1909	76,000	12,018	5,155	43	" 84
1910	78,000	12,149	5,817	48	" 80
1911	79,000	12,357	6,533	53	" 74
1912	80,000	12,596	7,171	57	" 79
1913	82,000	12,827	7,856	61	" 72
1914	85,000	13,034	8,499	65	" 73
1915	87,000	13,233	9,155	69	" 67
1916	90,000	13,420	9,763	72.75	" 69
1917	91,000	13,509	10,028	74.23	" 73
1918	91,000	13,514	10,116	74.86	" 80
1919	92,000	13,544	10,322	76.21	" 69
1920	93,033	13,554	10,472	77.26	" 77
1921	95,000	13,631	11,190	82.11	" 73
1922	96,000	13,844	11,447	82.68	" 76

Summary of Pipes and Fixtures of the Water System.

December 31, 1922.

Feet of main pipe (approximately)	549,672
Feet of service pipe (approximately)	477,805
Service connections (approximately)	13,844
Public fire hydrants	1,194
Private fire hydrants	66
Gates	1,969
Check Valves	8
Meters	11,447
Motor registers	3
Waterposts	66
Car-sprinkler connections	17
Blow-offs	190
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION.

The annual assessments paid by this city as its proportionate part of the cost and operation of the Metropolitan water works are given below: —

Year	Sinking Fund	Maintenance	Interest	Maturing Bonds	Total
1898......	No division made				$14,250 19
1899......	"	"	"		20,975 58
1900......	"	"	"		28,689 24
1901......	$12,491 73	$12,033 79	$32,291 24		56,816 76
1902......	19,014 85	12,955 64	30,427 40		62,397 89
1903......	15,748 56	12,763 10	48,776 77		77,288 43
1904......	16,404 42	15,393 87	54,938 64		86,736 93
1905......	21,358 11	13,666 71	55,535 91		90,560 73
1906......	22,345 50	17,412 51	57,402 07		97,160 08
1907......	25,365 30	18,880 01	62,089 30		106,334 61
1908......	24,865 73	15,221 12	68,604 23		108,691 08
1909......	24,812 23	21,220 56	66,540 41		112,573 20
1910......	25,018 52	18,212 28	66,825 45		110,056 25
1911......	25,424 55	19,573 82	69,849 26	$246 66	115,094 29
1912......	24,469 82	16,111 70	68,205 16	445 46	109,232 14
1913......	24,930 94	20,691 19	70,206 83	491 92	116,320 88
1914......	14,190 98	22,488 71	73,138 81	180 63	109,999 13
1915......	14,164 65	21,376 07	74,111 12	1,129 50	110,781 34
1916......	13,249 71	21,643 98	74,058 98	1,515 62	110,468 29
1917......	13,364 71	28,110 19	75,117 17	1,833 60	118,425 67
1918......	14,193 89	29,185 04	79,975 44	2,004 18	125,358 55
1919......	13,765 81	33,723 64	78,335 58	2,257 87	128,082 90
1920......	12,559 45	37,814 68	74,903 80	2,227 81	127,505 74
1921......	11,956 69	43,942 28	75,848 98	2,241 89	133,989 84
1922......	11,119 49	37,015 40	77,490 17	2,582 78	128,207 84
					$2,405,997 58

There has been credited to the city by the commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district, and water furnished to water companies the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1922: —

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	7,523,000	78	July	7,567,200	78
February	7,113,300	74	August	7,229,000	74
March	7,095,600	74	September ..	6,896,700	71
April	6,894,000	71	October	7,527,300	77
May	7,320,500	76	November ..	7,579,400	78
June	7,626,200	79	December ..	7,877,300	81

The consumption for the year was: —

Low-service system	2,090,461,000 gallons
High-service system	594,938,000 gallons
Total consumption	2,685,399,000 gallons
Average daily consumption	7,357,300 gallons
Average daily consumption, per capita, for Somerville	76 gallons
Average daily consumption, per capita, for Metropolitan district	94 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1922, as registered by the Metropolitan meters:

City or Town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	55	53	51	50	60	58	55	56	54	55	50	51	54
Belmont	50	51	53	54	60	59	58	58	62	60	57	57	57
Boston	121	117	108	107	103	109	107	109	108	110	107	113	110
Chelsea	82	80	74	70	77	78	78	77	73	75	72	75	76
Everett	92	89	85	81	85	87	87	84	85	87	85	90	86
Lexington	65	66	71	76	69	71	64	66	70	65	54	53	66
Malden	51	50	48	48	51	53	53	55	56	55	53	56	53
Medford	50	51	49	48	52	55	47	54	52	53	53	53	51
Melrose	61	59	61	61	64	66	66	65	61	63	60	58	62
Milton	42	43	42	43	48	47	42	43	46	50	49	45	45
Nahant	78	97	70	74	117	197	204	216	175	93	62	57	120
Quincy	85	88	87	86	88	90	85	85	86	79	79	75	84
Revere	72	67	63	63	71	72	80	81	74	69	61	66	70
Somerville	78	74	74	71	76	79	78	74	71	77	78	81	76
Stoneham	64	64	59	57	65	68	66	66	66	64	64	76	65
Swampscott ..	59	59	62	60	72	92	100	107	88	69	59	56	74
Watertown	78	74	69	64	69	77	78	75	75	75	77	71	73
Winthrop	51	50	50	50	54	58	65	67	57	51	49	49	54
Met. Dist.	101	98	92	91	90	95	93	95	93	94	92	96	94

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1922:

City of Town	Gallons Total Per Day	Gallons Per Capita per Day	Per. Cent. Services Metered
Milton	436,000	45	100
Medford	2,193,400	51	100
Malden	2,698,000	53	97
Arlington	1,059,600	54	100
Winthrop	902,400	54	99
Belmont	673,200	57	100
	1,167,800	62	99
Stoneham	523,200	65	98
Lexington	440,000	66	99
Revere	2,202,200	70	82
Watertown	1,621,800	73	100
Swampscott	629,800	74	100
Chelsea	3,416,500	76	99
Somerville	7,357,300	76	82
Quincy	4,253,700	84	91
	3,648,900	86	75
Boston	85,871,000	110	65
Nahant	172,300	120	76
Total District	119,267,100	94	77

Construction — Maintenance — Operation.

The construction work of the department is divided roughly into three classes, viz: installation of (1) water mains; (2) water services; (3) meters.

In the first two classes there has been a notable increase of activity during the year, while but comparatively few meters have been installed.

Details of construction work are given in the tables printed in this report; suffice it to say here that more feet of street mains to supply new buildings have been laid and more services have been installed during this year than in any other since 1914.

The following table is of interest as it gives the

Class of Premises Covered by Service Installation.

Automobile Sales Building	1
Bakery	1
Chemical laboratory	1
Dwelling houses	173
Factories	3
Factories; fire pipes	3
Garages; private	8
Garages; public	1
Garage; fire pipe	1
Gasoline filling stations	6

Lumber yard	**1**
Lunch cart	**1**
Milk station	**1**
Office	**1**
Paint shop	**1**
Stable	**1**
Stores	**12**
Storage warehouse	**2**
Storage warehouse; fire pipes	**2**
Tenements and stores; block	**1**
Total service installations	**221**

Maintenance and upkeep may also be divided into several classes, viz: (1) general operation; (2) street mains and attachments (hydrants, valves etc.); (3) services and fittings; (4) meters and boxes; (5) tools and equipment; (6) transportation.

The principal job on maintenance of street mains was the completion of replacing the old 6" pipe in Linwood street in anticipation of the street paving.

The hydrant and valve system has been as well looked after as labor and transportation conditions would permit; it is hoped soon to be able to institute a systematic method of inspection.

The increasing use of motor trucks is causing a noticeable addition to our work in the upkeep of the fire hydrant system, as many hydrants are broken by the operation of these vehicles in our streets. In most cases the department is able to obtain a settlement for the amount of the damages.

Other hydrants are put out of order by contractors and other inexperienced men using them without authority.

Our fire service system, covering about 1,200 hydrants, has been installed at large expense for protective purposes only and should not be used except by firemen in the discharge of their duties or by authorized waterworks employees. Our city ordinances prescribe penalties for unlawful use of fire hydrants and it may be necessary to bring offenders before the Courts for punishment. Some contractors argue that because the city gives them water without charge in doing work for the city that they are entitled to get it by operating the fire hydrants. In every such contract made by the city it should be clearly stated, so that there can be no misunderstanding, that the fire hydrants must *not* be opened by contractors.

The service branch of our department work, with its nearly 14,000 pipes, demands a large share of our labor and equipment and we have found it very difficult to keep up with the calls for improved water supply.

As each succeeding year adds to the amount of corrosion and filling up of the older pipes and fittings the problem of keeping them clear and satisfying the legitimate requirements of our water-takers becomes more and more difficult.

It is certain that more men and equipment will have to be provided for this work.

In anticipation of the permanent paving of a portion of Beacon street all the service pipes appearing to need renewal between Buckingham and Park streets were replaced with new lead pipes.

With nearly 12,000 water meters in operation the maintenance of this branch of our work keeps several men with equipment busily employed.

Our meter system sprang into intensive existence twenty years ago and has steadily increased in volume and importance. Besides the periodical reading of the meters and the accounting necessary for billing and collecting the rates, which are handled in the general office, there is a large and constantly expanding shop expenditure for the upkeep of the meters installed and this will grow with increased installation and advancing age of the meters in service. Ample provision must therefore be made for carrying on this permanent branch of the department work.

It is the custom of the department to own the meters and to furnish them without charge to the property owners, but to require payment from them of the cost of installation of the meters.

In most cases the rate-payers find their payments for the period of a year on metered consumption considerably less than on the old "annual" rate basis, although to secure this benefit proper attention must be given to leakages and other waste of water.

Under the law requiring all new houses to be metered 181 meters were installed. The general installation, however, eased up on account of the unusual activities in other directions, and there were but 67 of this class installed, making the city at the close of the year 82.68% metered.

Repairs must soon be made to some of our machine-shop tools and additional equipment must be provided for carrying on our service cleaning work.

Additional transportation in the form of at least two new trucks must be provided very soon to take the place of old and worn-out motor vehicles. Certain of our transportation equipment is of ancient date and, costing the city but little in the first place, can well afford to be laid aside now in favor of heavier trucks, better fitted for our requirements.

The general operation of the department is under the direction and control of the water commissioner. This includes the supervision of all branches of the work, extensions of the distribution system, purchase of supplies, employment of labor and settlement of the many problems arising in a water system supplying a population of nearly 100,000 people.

Pitometer Survey.

During the year a survey has been made by the Pitometer Company of New York of the entire high-service district of the city and of one section of the low-service district including the packing houses and railroad yards. The results were very satisfying as showing the generally tight condition of the water mains and services in the two portions of the city surveyed.

The general scope of the survey covered the following points: (a) A subdivision of the section to be surveyed into districts and measurements of the consumption throughout the twenty-four hours; (b) Subdivision of the districts where excessive waste was indicated, and investigations of all blocks on which high rates of flow were indicated to determine the cause; (c) A test of the Metropolitan Venturi meters for accuracy; (d) A check on large consumers for a period of twenty-four hours; (e) A test of all meters 4″ and over for accuracy; (f) A report of the work done and results accomplished.

Methods of the survey: The entire high-service system was divided into four districts, containing about 30½ miles of street mains and a population estimated at 30,000.

District 1 of the low-service system, embracing in a broad expression that part of the city lying south of Somerville avenue and Washington street, was also divided into four districts covering about 18 miles of water mains and an estimated population of 17,000.

Each district was formed by closing a line of boundary gates around the area to be tested, supplying that area through but one pipe. A pitometer was then inserted into this supply main through a 1″ corporation cock and a continuous measurement of the flow through it was made for a period of twenty-four hours.

As a general rule in districts where the minimum night rate is less than 50% of the average daily consumption the condition is considered satisfactory. However, in this survey all residential districts were investigated by sub-division at night, by supplying the district through the same or a smaller feed and by closing interior and opening exterior valves; then, by noting the corresponding drops in the consumption indicated by the pitometer, the rate of flow for each block was determined.

In high rate blocks where the rate could not be accounted for by large consumers, the underground waste or leakage was located with various forms of listening devices.

In the tests of the Venturi meters, a pitometer was set up on the main leading from the meters and readings were taken from the Venturi charts and compared with the pitometer records for a period of twenty-four hours.

The large city meters were tested by placing a pitometer on the main or service pipe leading into the meter and measuring the flow for a period of twenty minutes·

The results of investigations on the total supply showed that during the period of the test the total consumption of the high-service system was 1,587,000 gallons a day and the minimum night rate was 1,047,000 a day. On a basis of the estimated population the per-capita consumption was approximately 53 gallons a day.

The total amount of leakage disclosed in the survey of the high-service was 228,000 gallons a day. Of this amount leaks of 106,000 gallons a day were discovered and were being repaired by the water department. The remaining 182,000 gallons a day represents the real saving due to the pitometer survey. All of the leaks were on house services and one of them was discharging out of holes in the pipe and running into a nearby sewer at the rate of 110,000 gallons a day. There was nothing on the surface of the ground to indicate any leakage but the earth filling around the leaking pipe gave every indication that the water had been escaping and running into the sewer for some time.

Respecting the valves in the high-service system the report states: "Most of the valves were found to be in very good condition. About 70% of the valves were operated. The majority of the valve boxes were covered by a tar paving making it difficult to locate them. The division gates and check valves were almost 100% tight. The water department is to be commended for this excellent condition of the division gates, because it is highly important in cities that have both high and low-service to keep the two entirely separate."

Of the hydrants the report reads: "Only a small percentage of the total number were operated during our survey; however those we did operate were in first class condition."

Regarding the mains the report says: "The mains were found to be very clean and free from loose sediment. Very few complaints were recorded during the survey which, in most cases, reversed the flow entirely and would have dislodged mud and all loose sediment if present."

The report on the high-service system concludes as follows: "As a whole the high-service system was found to be in very good condition. During our survey we observed that leaks large and small were attended to without delay, and the desire of the water department seemed to be to keep the system in the best condition possible at all times."

The following recommendation was also made: "In order to have two large mains feeding West Somerville the 12″ main in Dearborn road and College avenue should be extended west along Talbot avenue and connect with the present main therein."

In that section of the low-service system which was investigated and which has been previously referred to, the average daily consumption was found to be 3,190,000 gallons and the minimum night rate was 2,200,000 gallons or 69% of the average daily rate. This is largely an industrial section of the city and considerable water is used nights in the several packing-house plants and in the extensive yards of the Boston & Maine Railroad, the figures showing an industrial and miscellaneous consumption daily of 1,975,000 gallons. The average daily rate of consumption per capita in the residential sections of this district is shown to be about 56 gallons.

The leakages discovered in this district by the pitometer survey were scattered and mostly small but amounted in total to 108,000 gallons a day, or 6,000 gallons per mile of street mains.

Of the meter tests in Section 1 of the low-service system the report of the Pitometer Company reads: "About two-thirds of the consumption of Section 1 is taken up by Districts No. 3 and No. 4 and practically all of it is actually accounted for by meter registration. This condition is very commendable for the water department. All the tests on the meters were made during normal flow. Two of the four-inch meters had been recently repaired and overhauled by the water department and were found O. K. The 6″ Worthington meter was found to be registering exactly. This meter registers the greatest flow of any of the large meters. An average daily flow through it is 250,000 gallons. It was impossible to test the remainder of the large meters at this time due to intricate piping adjacent to them." The report also shows a 4″ Gem meter and a 4″ Trident Compound meter to be registering accurately on a test covering a period of 16 minutes.

Concerning the valves the report states: "About 80% of the valves in the section were operated. They were found to be in very good condition." Of the mains the report reads: "The mains are also in first-class condition· The average pipe coefficient obtained from the tests was .82"

The report on this section of the low-service system concludes: "As has been stated before, the industrial consumption accounts for practically two-thirds of the total consumption of Section 1, and the same is mostly metered.

The water waste in and around these large plants is very low and we consider the existing conditions very good. No large leaks were discovered in the residential districts; however the average rate per block is higher than it need be and there is probably quite a little unmetered fixture leakage. A rigid inspection of all plumbing in unmetered buildings would undoubtedly bring results. A thorough investigation was made on all blocks having a large rate of flow and in almost every case small fixture leaks were discovered. In general the condition of Section 1 of the low-service is very good and the water department is to be commended for the excellent condition existing in and about the plants of the largest consumers."

The Company makes the following recommendations: (1) All valves and hydrants should be operated at least once a year. (2) Gate boxes should be maintained up to grade so that they can be easily located in case of emergency.

As the city is now about one-half covered by the survey of the Pitometer Company I recommend that the remaining portion be tested out during the coming year.

Financial Statistics of Cities.

From a census report issued by the Department of Commerce as of December 31, 1920, showing the total and per capita water revenue receipts from earnings, and the total and per capita expenses and outlays, the following figures, interesting from their very favorable comparison with other cities of about the same population, are taken:

City: Somerville, Mass.
Rank in population: 78

Water Revenue receipts from earnings; per capita $2.74
Water Payments for expenses and outlays; per capita $1.12

Additional High-Service Supply.

The Metropolitan District Commission has nearly completed the construction of an additional supply main from near the reservoirs at Spot Pond to a point near their present connection with our local high-service system in Broadway at Cedar street. It is hoped that this will materially strengthen the conditions at present existing in our high-service supply. I think it would be wise now to extend our own high-service main through Cedar street from the water-works yard to a connection with the existing main at Hudson street in order to boost the delivery of high pressure water at this central point of the city and equalize its distribution throughout that district.

I also recommend the early construction of a 12″ water main in Talbot avenue, connecting the two existing dead ends in order to bring in a larger supply to the West Somerville high-service district.

Our low-service supply also is in need of building up in Joy and Poplar streets and I recommend that the old mains in these two streets be replaced with larger pipes during the coming season·

Water Income.

The water income for the year was the largest ever received, amounting to $284,126.62. Notwithstanding the heavy outlays of the department, construction account showing more than double that of the previous year, a substantial surplus of over $48,000 is recorded on our books.

As usual, all department bills contracted during the year were paid from the amounts appropriated and the year closed with no current liabilities and no funded indebtedness.

Respectfully submitted,

FRANK E. MERRILL,

Water Commissioner.

Street mains, Gates, Hydrants, Etc., Laid, Set, and Removed in 1922

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		DISCONT'D		SET.		DISCONT'D		SET.		DISCONT'D		SET.		DIS-C'T'D		SET.	DIS-C'T'D
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Alewife Brook Parkway	Street Main: From connection with 12" main in the Parkway at point 12' south from south line of Gordon Street to connection with old 12" main at point 274' south from south line of High Street; completing the pipe line in the Parkway between North Street and Gordon Street.	12"	1479																
	Section Gate: On south line of Fairfax Street, 5' west from east line of the Parkway.					12"	Smith												
	Section Gate: On north line of High Street, 5' west from east line of the Parkway.					12"	Rens.												
	Blow-off Gate: 9' south from centre of sewer manhole in sidewalk near north line of Woods Avenue and 10' west from east line of the Parkway.	4"	14			4"	Rens.							4"	1				
	Blow-off Gate: On north line of High Street, 12' west from east line of the Parkway. (Connection is with tee in 6" hydrant branch running to hydrant on west side of the Parkway opposite High Street.)					4"	Rens.							4"	1				
	Blow-off Gate: 4' south from north line of High Street, 10' west from east line of the Parkway. (Connection is with tee in the Alewife Brook Parkway main.)	6"	7			4"	Rens.							4"	1				
	(These two blow-offs unite in one pipe entering the sewer manhole at High Street.)	4"	19																
	Hydrant: On west side of Alewife Brook Parkway, opposite High Street.	6"	52							6"	Chap								
	Gate on Hydrant Branch: 4' out from the hydrant on west side of the Parkway opposite High Street.					6"	Rens.												
	Gate on Hydrant Branch: 4' north from north line of High Street, 13' 6" west from east line of the Parkway. (On branch running to hydrant on west side of the Parkway opposite High Street.)					6"	Rens.												

Beacon Street	Gate on Hydrant Branch: 77' north from north line of Fairfax Street, 5' west from east line of the Parkway. (Hydrant not yet installed.)	6"	5			6"	Smith									
	Gate on Hydrant Branch: 28' west from west line of Buckingham Street and 4' out from hydrant.					6"	Rens									
	Gate on Hydrant Branch: 8' west from west line of Waldo Avenue and 4' out from hydrant.					6"	Rens.									
	Gate on Hydrant Branch: 79' west from west line of Calvin Street and 4' out from hydrant.	6"	2			6"	Lud.									
	Gate on Hydrant Branch: 26' east from east line of Washington Street and 4' out from hydrant.					6"	Lud.									
	Waterpost and Gate Removal: 185' east from Washington Street.			2"	11			2"	Chap.							1
Boston Avenue	Street Main: From connection with main in Boston Avenue at point 10' south from south line of Prichard Avenue to dead end 58' south from south line of Prichard Avenue.	10"	48													
Boynton Yard (Glass House Ct)	Hydrant Removal: 360' west from Water Street, near corner of Windsor Street. (1916)			6"	10							6"	Mat.			
Bradford Avenue	Street Main Replaced: near School Street, 6 feet; near dead end of Bradford Avenue, 12 feet.	2"	18	2"	18											
	Blow-off Gate: 151' east from east line of School Street 13' south from north line of Bradford Ave.	2"	5			2"	Chap.							2"	1	
Cady Avenue	Hydrant: 145' west from Simpson Avenue.	6"	20							6"	Corey					
	Gate on Hydrant Branch: 145' west from west line of Simpson Avenue and 4' 6" out from hydrant.					6"	Rens.									
Chapel Court	Street Main Replaced: From connection with main pipe in Sycamore Street to gate on west line of Sycamore Street.	2"	22	2" 1"	11 11											
	Gate and Gate Removal: 1' 10" north from south line of Chapel Court, on west line of Sycamore St.					2"	Chap.	2"	Chap.							
Corinthian Road	Street Main: From connection with main pipe in Corinthian Road at point 331' south from south line of Broadway to connection with main pipe in Cady Avenue; completing the pipe line in this street.	8"	212													
	Gate: On north line of Cady Avenue, 13' 4" east from west line of Corinthian Road.					8"	Rens.									
Cottage Circle	Street Main Replaced: From connection with main pipe in Cottage Avenue to point 4' west from west line of Cottage Avenue.	4"	31	2"	31											
	Gate: On west line of Cottage Avenue, 8' 4" north from south line of Cottage Circle.					4"	Rens.	2"	Chap.							

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		DISCONT'D		SET.		DISCONT'D		SET.		DISCONT'D		SET.		DISC'T'D		SET.	DIS-C'T'D
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No	No.
Cross St. Place	Hydrant: 7' west from Cross Street.	6"	14							6"	Hol. G								
	Gate on Hydrant Branch: 7' west from west line of Cross Street and 3' 6" out from hydrant.					6"	Rens.												
Cross Street	Hydrant Removal: 32' north from Cross Street Place.			6"	6							6"	Hol. G						
	Hydrant Removal: 6' north from Pearl Street.			6"	6							6"	Hol G.						
	Hydrant: 8' north from Otis Street, on schoolhouse lot.	6"	20							6"	Corey								
	Gate on Hydrant Branch: 8' north from north line of Otis Street, in sidewalk 4' 6" out from hydrant.					6"	Rens.												
Cross St. East	Street Main: From connection with main pipe in Pennsylvania Avenue to point 12' north from north line of Pennsylvania Avenue.	12"	40																
	Section Gate: On north line of Pennsylvania Avenue, 13' 4" west from east line of Cross St. East.					12"	Rens.												
	Waterpost and Gate Removal: 64' north from Broadway.			2"	5														1
Curtis Avenue	Gate on Hydrant Branch: 206' west from west line of Curtis Street and 4' 4" out from hydrant.					6"	Ren												
Curtis Street	Street Main: From connection with main pipe in Curtis Street at point 10' south from south line of Upland Road to connection with main pipe in Upland Road.	6"	23																
Delaware Street	Gate: On east line of Aldrich Street, 13' south from north line of Delaware Street.					6"	Rens.												
Fairfax Street	Street Main: From connection with main pipe in Fairfax Street at gate on west line of North Street to connection with main pipe in Alewife Brook Parkway.	8"	949																
	Gate: On east line of Alewife Brook Parkway, 13' 4" north from south line of Fairfax Street.					8"	Rens.												

	Section Gate: 566' east from east line of Alewife Brook Parkway, 13' 4" north from south line of Fairfax Street.					8" Rens.			
	Hydrant: 80' west from North Street.	6"	1					6" Corey	
	Gate on Hydrant Branch: 80' west from west line of North Street and 4' out from hydrant.	6"	3			6" Rens.			
	Gate on Hydrant Branch: 569' east from east line of Alewife Brook Parkway. (Hydrant not yet installed.)	6"	3			6" Smith			
	Gate on Hydrant Branch: 148' east from east line of Alewife Brook Parkway. (Hydrant not yet installed.)	6"	3			6" Smith			
Fitchburg Street	Gate Removal: 12' west from east end of Fitchburg Street and 14' south from north line of Fitchburg Street. (Gate was on discontinued supply main to old McLean Asylum Grounds.)						6" Chap.		
	Hydrant Removal: 14' west from east end of Fitchburg Street.			4"	10				6" Hol.
	Hydrant: 144' east from Linwood Street.	6"	10					6" Hol.	
	Gate on Hydrant Branch: 144' east from east line of Linwood Street and 3' 6" out from hydrant.					6" Smith			
Franklin Avenue	Gate: On north line of Washington Street, 7' west from east line of Franklin Avenue.					6" Rens.			
	Gate Discontinued: 11' south from north line of Washington Street, 7' west from east line of Franklin Avenue. (Gate was left in ground and is open; gate box was removed.)						6"		
	Hydrant: 277' north from Washington Street.	6"	4					6" Hol. Gt.	
	Gate on Hydrant Branch: 277' north from north line of Washington Street and 2' out from hydrant.					6" Rens.			
High Street	Street Main: From connection with main pipe in High Street at point 264' west from west line of North Street to connection with main pipe in Alewife Brook Parkway, completing the pipe line in this street.	12"	416						
	Gate: On east line of Alewife Brook Parkway, 13' 4" north from south line of High Street.					12" Rens.			
	Section Gate: 389' west from west line of North Street, 13' 4" north from south line of High Street.					12" Rens.			
	Hydrant: 385' west from North Street.	6"	4					6" Corey	
	Gate on Hydrant Branch: 385' west from west line of North Street, 4' out from hydrant.	6"	3			6" Rens.			

STREET	DESCRIPTION	PIPES				GATES.				HYDRANTS				BLOW-OFFS.				WATER POSTS	
		LAID.		DISCONT'D		SET.		DISCONT'D		SET.		DISCONT'D		SET.		DIS-C'T'D		SET.	DIS-C'T'D
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Highland Avenue	Hydrant Replacement: 59' east from West Street.									6"	Mat.	6"	Mat.						
	Gate on Hydrant Branch: 59' east from east line of West Street and 5' 6" out from hydrant.	6"	5			6"	Rens.												
Holyoke Road	Hydrant Removal: 185' south from south line of Elm Street.			6"	10							6"	Hol. C.						
	Hydrant: 25' east from westerly bend in Hoyloke Road.	6"	20							6"	Hol.								
	Gate on Hydrant Branch: 25' east from westerly bend in Holyoke Road and 4' 6" out from hydrant.					6"	Rens.												
Joy Street	Hydrant Replacement: 274' north from Poplar Street.	6"	2	6"	2					6"	Chap.	6"	Chap.						
	Gate on Hydrant Branch: 274' north from north line of Poplar Street and 3' 6" out from hydrant.					6"	Smith												
Kensington Avenue	Street Main: From connection with main pipe in Mystic Avenue to west line of Mystic Avenue.	12"	6																
	Gate: On west line of Mystic Avenue, 13' 4" south from north line of Kensington Avenue.					12"	Chap.												
Lewis Street	Street Main: From connection with main pipe in Magnus Avenue to connection with main in Parkdale Street.	10"	362																
	Street Main: From connection with main pipe in Parkdale Street to dead end 29' east from east line of Parkdale Street.	2"	42																
	Gate: On east line of Magnus Avenue, 13' 4" south from north line of Lewis Street.					10	Coffin												
	Tee for Hydrant: 18' east from west line of Rose Street, 13' 4" south from north line of Lewis Street.																		

Linwood Street	Street Main Replaced: From connection with main pipe in Linwood Street at section gate 492' south from south line of Washington Street to connection with main pipe in Linwood Street at point 8' south from south line of Washington Street; completing the 12" line in this street.	12"	484	6"	484						
	Hydrant: 7' south from Washington Street.	6"	9							6" Corey	
	Gate on Hydrant Branch: 7' south from south line of Washington Street and 4' out from hydrant.					6"	Rens				
	Gate on Hydrant Branch: 384' south from south line of Washington Street and 3' out from hydrant.					6"	Rens.				
Lowell Street	Hydrant Replacement: 52' north from Crown Street.									6" Corey	6" Hol.
	Gate on Hydrant Branch: 52' north from north line of Crown Street and 3' out from hydrant.					6"	Rens.				
Marshall Street	Hydrant Removal: 32' north from Stickney Avenue.										6" P. & C
	Hydrant: 22' 6" north from Stickney Avenue.	6"	9							6" P. & C.	
	Gate on Hydrant Branch: In sidewalk, 26' 6" north from north line of Stickney Avenue and 4' north from hydrant.					6"	Rens.				
Mead Street	Hydrant Replacement: 48' east from Claremon St.	6"	3	6"	3					6" Corey	4" Big.
	Gate on Hydrant Branch: 48' east from east line of Claremon Street and 3' 6" out from hydrant.					6"	Rens.				
Merriam Street	Hydrant: 193' south from Somerville Avenue.	6"	7							6" Mat.	
	Gate on Hydrant Branch: 193' south from south line of Somerville Avenue and 4' 9" out from hydrant.					6"	Rens.				
Miller Street	Street Main: From connection with main pipe laid in Miller Street in 1921 at point 12' north from north line of Beacon Street, northerly to tee located at point 131' north from north line of Beacon Street. Also, from connection with said tee easterly 20' to connection with existing main in Miller Street.	6"	160								
	Gate: On east line of Miller Street, at angle, 11' south from north line of Miller Street.					6"	Rens.				
Murray Street	Street Main: From connection with 6" main pipe in Murray Street at point 28' north from north line of Roland Street to point 4' south from north line of Roland St.	6"	32								
	Gate: On north line of Roland Street and 10' east from west line of Murray Street.					6"	Rens.				

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS.	
		LAID.		DISCONT'D		SET.		DISCONT'D		SET.		DISCONT'D		SET.		DIS-C'N'T		SET.	DIS-C'N'T
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	No.	Size.	No.	No.	No.
	Blow-off Replacement and Gate: 12' east from west line of Murray Street and 26' north from north line of Roland Street.	4"	7			4"	Lud.	2"	Chap.					4"	1	2"	1		
Mystic Avenue	Street Main: From connection with main pipe in Garfield Avenue to dead end 136' north from north line of Kensington Avenue.	12"	382																
	Section Gate: On south line of Kensington Avenue, 7' east from west line of Mystic Avenue.					12"	Chap.												
Parkdale Street	Street Main: From connection with main pipe in Parkdale Street at point 25' south from south line of Washington Street to connection with main pipe in Lewis Street.	10"	491																
	Gate: On north line of Lewis Street, 13' 4" west from east line of Parkdale Street.					10"	Smith												
	Hydrant: 120' south from Washington Street.	6"	7							6"	Corey								
	Gate on Hydrant Branch: 120' south from south line of Washington Street and 4' out from hydrant.					6"	Rens.												
	Gate on Hydrant Branch: 56' north from north line of Lewis Street. (Hydrant not yet installed.)	6"	3			6"	Rens.												
Pennsylvania Ave.	Street Main: From connection with main pipe in Pennsylvania Avenue at point 1' east from west line of Connecticut Avenue to connection with main pipe in Cross Street East.	10"	166																
	Gate: On east line of Cross Street East, 13' 4" north from south line of Pennsylvanie Avenue.					10"	Rens.												
	Hydrant: 80' east from Cross Street East.	6"	7							6"	Hol. Gt.								
	Gate on Hydrant Branch: 80' east from east line of Cross Street East, 4' 6" out from hydrant.					6"	Smith												

Powder House Boulevard	Hydrant Removal: 190′ west from Packard Avenue.											6″	Hol C.					
	Hydrant: 182′ west from Packard Avenue.									6″	Chap.							
	Gate on Hydrant Branch: 188′ west from Packard Avenue on south side of the Boulevard, in grass plot 6′ out from the hydrant .					6″	Rens.											
Rose Street	Street Main: From connection with main pipe in Rose Street at point 7′ south from south line of Rose Street to a connection with main pipe in Lewis Street	8″	8															
School Street	Gate on Hydrant Branch: 6′ south from south line of Montrose Street and 9′ 6″ out from hydrant.					4″	Rens.											
Somerville Avenue	Gate on Hydrant Branch: 90′ west from Prospect Street and 4′ out from hydrant.					6″	Smith											
	Hydrant Replacement: 86′ west from Granite Street.	6″	4	6″	4					6″	Chap	6″	Chap.					
	Gate on Hydrant Branch: 86′ west from west line of Granite Street and 4′ 6″ out from hydrant.					6″	Chap.											
	Gate on Hydrant Branch: 116′ west from west line of Wilson Square and 4′ out from hydrant.					6″	Rens.											
	Gate on Hydrant Branch: 600′ east from east line of Mossland Street and 4′ out from hydrant.					6″	Rens.											
	Gate on Hydrant Branch: 308′ east from east line of Mossland Street and 4′ out from hydrant.					6″	Rens.											
	Gate on Hydrant Branch: 188′ west from west line of Mossland Street and 4′ out from hydrant.					6″	Rens.											
	Gate on Hydrant Branch: 96′ west from west line of Acadia Park and 4′ out from hydrant.					6″	Rens.											
	Section Gate: 33′ 6″ west from west line of Wilson Square and 18′ south from north line of Somerville Avenue.					8″	Rens.											
	Section Gate: On west line of Mossland Street and 17′ south from north line of Somerville Avenue.					6″	Rens.											
	Blow-off and Gate: 28′ 4″ west from west line of Wilson Square and 24′ south from north line of Somerville Avenue.					4″	Rens.							4″	1			
	Waterpost and gate removal: 119′ west from School Street.			2″	10			2″	Chap									1
	Waterpost and gate removal: 35′ east from Central Street.			2″	10			2″	Chap.									1
	Waterpost and Gate Removal: 120′ west from Edward Wilson Square.			2″	14			2″	Chap.									1
	Waterpost and Gate Removal: 44′ east from Mossland Street.			2″	14			2″	Chap.									1

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW OFFS.				WATER POSTS.	
		LAID.		DISCONT'D		SET.		DISCONTI'D		SET.		DISCONT'D		SET.		DIS-C'T'D		SET.	DIS-C'T'D
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	No.	Size.	No.	No.	No.
Springfield Street	Hydrant Replacement: 21' south from Dickinson St.	6"	2	6"	2					6"	Corey.	6"	Hol.Gt						
	Gate on Hydrant Branch: 21' south from south line of Dickinson Street and 3' out from hydrant.					6"	Rens.												
Sterling Street	Street Main: From connection with main pipe in Sterling Street at point 132' west from west line of North Street to connection with main pipe in Alewife Brook Parkway, completing pipe line in this street.	8"	680																
	Gate: On east line of Alewife Brook Parkway, 13' 4" north from south line of Sterling Street.					8"	Rens.												
	Section Gate: 423' west from west line of North Street, 13' 4" north from south line of Sterling St.					8"	Rens.												
	Hydrant: 36' 6" west from North Street.	6"	6							6"	Corey.								
	Gate on Hydrant Branch: 36' 6" west from west line of North Street and 4' out from hydrant.					6"	Rens.												
	Hydrant: 383' west from North Street.	6"	4							6"	Corey								
	Gate on Hydrant Branch: 383' west from west line of North Street and 4' out from hydrant.	6"	3			6"	Rens.												
	Hydrant: 33' east from Alewife Brook Parkway.	6"	1							6"	Corey.								
	Gate on Hydrant Branch: 33' east from east line of Alewife Brook Parkway and 4' out from hydrant.	6"	3			6"	Rens.												
Talbot Avenue	Street Main: From connection with main pipe in Talbot Avenue at point 193' east from east line of Latin Way to dead end 265' east from east line of Latin Way.	12"	72																
	Section Gate: On west line of Latin Way, 16' 4" south from north line of Talbot Avenue.					8"	Rens.												
Union Suare	Hydrant Replacement: 267' east from Webster Ave.	6"	2	6"	2					6"	Chap.	6"	Mat						
Upland Road	Street Main: From connection with main pipe in Curtis Street to point 127' west from west line of Curtis Street.	8"	154																

	Gate: On west line of Curtis Street, 13' 4" north from south line of Upland Road.				8" Rens.						
Washington St.	Hydrant Replacement: 3' west from Murray Street.						6" Chap	6" Hol.			
	Gate on Hydrant Branch: 3' west from west line of Murray Street, in sidewalk 2' south from hydrant. (Hydrant branch connects with Murray Street main.)				6" Smith.						
Windsor Street	Hydrant: 20' south from Boynton Yard (Glass House Court) (1916)	6"	6				6" Mat.				
Woods Avenue	Street Main: From connection with main pipe in Woods Avenue at point 211' west from west line of North Street to connection with main pipe in Alewife Brook Parkway. (Completing pipe line in this Street.)	10"	947								
	Gate: On east line of Alewife Brook Parkway 13' 4" north from south line of Woods Avenue.				10" Rens.						
	Section Gate: 496' west from west line of North Street, 13' 4" north from south line of Woods Avenue.				10" Rens.						
	Gate on Hydrant Branch: 492' west from west line of North Street. (Hydrant not yet installed.)	6"	3		6" Rens.						
	Gate on Hydrant Branch: 323' east from east line of Alewife Brook Parkway. (Hydrant not yet installed.)	6"	3		6" Smith.						
	Gate on Hydrant Branch: 72' east from east line of Alewife Brook Parkway. (Hydrant not yet installed.)	6"	3		6" Smith.						
			7566	674	79	10	27	15	6	1	6

SUMMARY OF STATISTICS.

FOR THE YEAR ENDING DECEMBER 31, 1922.

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics.

Population, census 1920, 93,033; present, estimated 96,000.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water.

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1922, 96,000.
Population supplied, Dec. 31, 1922, 96,000.
Total consumption for the year, 2,685,399,000 gallons.
Average daily consumption, 7, 357,300 gallons.
Gallons per day to each inhabitant, 76.

Statistics Relating to Distribution System, 1922.

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 7.566 feet; discontinued 674 feet; net extension, 6892 feet.
Total now in use, 104.1 miles.
Number of hydrants added during year (public, 12; private, 2),14.
Number of hydrants (public and private) now in use, 1,260.
Number of stop gates added during year, 69.
Number of stop gates now in use, 1,969.
Number of blow-offs, 190.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron.
Sizes, one-half to eight inches.
Extended 7,708 feet; discontinued 348 feet.
Total now in use 90.5 miles.
Number of service taps added, 221; discontinued, 8; increase, 213.
Number now in use, 13,844.
Number of meters added, 330; meters and motor registers discontinued, 73; net increase, 257.
Number now in use, 11,447.
Percentage of services metered, 82.68.
Percentage of water receipts from metered servics, 89.4.
Number of motors and elevator registers added, 0; removed, 0.
Number now in use, 3 (included in number of meters).

REVENUE

From Water Rates: —		
Fixture rates	$28,669 38	
Meter rates	241,239 03	
Total from consumers		$269,908 41
From other sources: —		
Water service assessments		9,674 58
Labor and materials		4,543 63
Total		$284,126 62

Disposition of balance: applied to municipal purposes.

Cost of works to date	$1,127,746 65
Bonded debt at date	None

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, repairs and renewals)	$69,464 05	
Special: —		
Miscellaneous accounts	4,543 63	
Total		$74,007 68
Water Works Buildings		1,324 84
Water Works Construction: —		
Mains	$20,841 76	
Services	9,158 73	
Meters	2,539 43	
Total construction		$32,539 92
Metropolitan water assessment		128,207 84
Balance		48,046 34
Total		$284,126 62

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Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1923

ANNUAL REPORT

OF THE

Water Commissioner

OF THE

Compliments of

FRANK E. MERRILL,

Water Commissioner.

SOMERVILLE PRESS PRINT.
1924.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO, MASSACHUSETTS.

Settled, when part of Charlestown, 1630.
(Home of Colonial Governor John Winthrop).
Incorporated a town, 1842.
Established a city, 1872.

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet.
Highest building elevation in the city 145 feet.
Area of city, including land and water, about 4.22 square miles.
Land, 2,461.50 acres; water and marsh, 238.50 acres.
Population, 1920 census, 93,033.
Present population, estimated, 98,000.
Entire population on line of pipe and supplied with water.

Water works owned by City of Somerville.
Construction commenced in 1868.
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds.
High service 45 to 100 pounds.

Mayor

HON. JOHN M. WEBSTER

Water Commissioner

FRANK E. MERRILL

Office of the Water Department

Room 10, City Hall

Department Buildings and Yard

Cedar street, near Broadway.

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS:

1868 — 1871

SOMERVILLE MYSTIC WATER COMMITTEE (5)

Acts 1868; Chap. 202

1872 — 1890

SOMERVILLE MYSTIC WATER BOARD (5)

Acts 1871; Chap. 182

1891 — 1897

SOMERVILLE MYSTIC WATER BOARD (3)

Acts 1890; Chap. 218

1898 — 1899

BOARD OF WATER COMMISSIONERS (3))

Acts 1898; Chap. 33

1900 —

WATER COMMISSIONER (1)

Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER

Office of the Water Commissioner,
January, 1924.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1923, this being the fiftieth annual report of the water department and my twenty-fourth as water commissioner:

Revenue and Expenditures

Water bills have been issued as follows:—

"Annual" water charges, amounting to			$26,720 25
"Additional" water charges, amounting to . . .			1,175 17
"Metered" water charges, amounting to			265,589 76
			$293,485 18
Abatements and refunds			3,273 15
Income from sale of water			$290,212 03
Receipts; water service assessments .		$12,471 05	
Receipts; labor and materials sold:—			
Misc. accounts charged .	$8,223 42		
Abatements . . .	616 60	7,606 82	
			20,077 87
Total income of water works . .			$310,289 90

This amount was used as follows:—

For water works purposes:—

Under Control of the Water Commissioner

Water Works Maintenance . . .	$74,824 56	
Water Works Extension	25,780 36	
Miscellaneous accounts	7,606 82	
		$108,211 74

Not Under Control of the Water Commissioner

Metropolitan water works assessment .	$139,164 15	
Maintenance water works buildings .	2,155 26	
		$141,319 41

For other municipal purposes:—

Not Under Control of the Water Commissioner

Surplus	$60,758 75
Total	$310,289 90

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements

WATER MAINTENANCE ACCOUNT

Appropriations made by Board of Aldermen		$82,600 00
Department accounts; receipts . . .		1,199 68
Water works extension account; receipts .		19,692 76
Refund		6 24
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$74,824 56	
Amount expended for materials used in extension of the water works . . .	19,692 76	
Miscellaneous accounts	7,606 82	
Labor and materials furnished municipal departments	1,199 68	
Expenditure refund	6 24	
Balance	168 62	
	$103,498 68	$103,498 68

WATER WORKS EXTENSION ACCOUNT

Appropriations made by Board of Aldermen .		$25,800 00
Department accounts: receipts . . .		173 23
Amount expended for labor and materials used in extension of the water works .	$25,780 36	
Water Service: Departments account . .	173 23	
Balance	19 64	
	$25,973 23	$25,973 23

Cost of Water Works

The total cost of water works on December 31, 1922, as represented by the expenditures from appropriations for water works extension was	$1,127,746 65
Expended during the year 1923, on extension account	$ 25,780 36
Total expenditures, December 31, 1923 .	$1,153,527 01

Water Works Income from 1898 and its Distribution

The water income and its distribution from 1898 to 1923, inclusive, is shown in the following table:—

Total water income	$6,260,126 07
Distribution:—	

Water Works Account

Water works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$1,649,132 41	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments . .	2,545,161 73	
Maintenance Water Works buildings .	11,772 36	
		$4,566,641 50

Other Municipal Accounts

Various municipal departments through specific appropriations and general revenue account	$1,693,484 57
	$6,260,126 07

Water Distribution System—Construction

STREET MAINS

Approximate number of feet of street mains in the city, January 1, 1923, (including hydrant branches and blow-offs)		549,672
Feet of street mains laid in 1923	2,253	
Feet of hydrant branches laid in 1923 . . .	138	
Feet of blow-off branches laid in 1923 . . .	0	
Total feet of pipe laid	2,391	
Feet of pipe removed or replaced . . .	840	
Net increase in feet of pipe		1,551
Total approximate feet of pipe in the city . .		551,223
Total pipe mileage, approximately . . .		104.4

The sizes and lengths of pipe laid and discontinued are as follows:—

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
¾″	0	0	6″	517	683
1″	16	0	8″	754	0
2″	118	134	10″	670	0
4″	0	23	12″	316	0

The pipes constructed and replaced during the year are as follows:—

Constructed:	Size	Feet Laid	Feet Discontinued	Size Discontinued
Blakeley Ave.	8"	26		
Boston Ave.	10"	36		
Cross St. East	12"	276		
Edmonton Ave.	8"	433		
Farragut Ave.	6"	204		
Hillsdale Rd.	8"	26		
Kensington Ave.	12"	40		
Laurel Ter.	6"	159		
Maple Ave.	6"	9		
Upland Road	8"	265		
Replaced:				
Chestnut St.	6"	10	10	6"
Eustis St.	2"	118	134	2"
	1"	16		
Garfield Ave.	8"	4	4	6"
Joy St.	10"	344	344	6"
Poplar St.	10"	290	290	6"
Hydrant Branches	6"	135	35	6"
			23	4"
		2,391	840	

Hydrants, Gates, etc.

Number of fire hydrants in city January 1, 1923		1,194	
Number set during year	38		
Number removed during the year	31		
Net increase in number of hydrants		7	
Total number of public fire hydrants			1,201
Number of private fire hydrants, January 1, 1923		66	
Number added		0	
Total number of private fire hydrants receiving their supply from the city mains		66	

Number of gates in city, January 1, 1923			1,969
Number set during the year for streets	10		
Number of section gates set	3		
Number set on hydrant branches	39		
Number set on blow-off branches	0		
Number set on car-sprinkler connections	0		
		52	
Number of street gates removed	1		
Number of section gates removed	1		
Number of waterpost gates removed	0		
Number of blow-off gates removed	0		
Number of hydrant branch gates removed	3		
		5	
Net increase in number of gates			47
Total number of gates in city			2,016
Number of check-valves in city			8
Number of blow-offs in city January 1, 1923		190	
Number added during the year	0	0	
Number discontinued	0	0	
Total number of blow-offs			190
Number of waterposts in city January 1, 1923		66	
Number removed during the year		0	
Total number of waterposts			66
Number of drinking fountains in city			8
Number of car-sprinkler connections in city			17

Water Services

Number of services in city January 1, 1923 (approximately)		13,844	
Number laid during the year	239		
Number permanetly discontinued	38		
Net increase in services		201	
Total number of water services in city			14,045
Amount received for services laid in 1923			$12,471.05
Number feet service pipe in city January 1, 1923 (city and private) approximately			477,805
Number of feet laid during the year	8,705		
Number of feet discontinued	1,270		
Increase in feet of service pipe			7,435
Total feet service pipe (city and private) (approximately)			485,240
Total service mileage (approximately)			91.9

Size, number and length of services installed in 1923:—

108-⅝"-4005'
110-¾"-3866'
11-1"-363'
1-1½"-31'
4-2"-230'
1-4"-18'
4-6"-192'

Number of fire services installed during 1923 (Included in above)	6	

Location of Fire Services	No.	Size
Cedar St., No. 154; White Cross Laundry Co. Factory Building	1	6"
Highland Ave., No. 373; A. W. Hastings & Co. Warehouse	1	6"
Leland St., Fresh Pond Ice Co., Stable . .	1	6"

Water Meters

Number of water meters in city, January 1, 1923 .		11,447
Number installed during the year, new . . .	674	
Number reset	76	
	750	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	118	
Net increase in number of operating meters . .		632
Total number of meters in service		12,079
Number of motor registers (included in above) .		3
Per cent. of all services metered		86.

Operating Meters December 31, 1923

Size	⅝"	¾"	1"	1½"	2"	3"	4"	6"	Total
No.	11623	288	104	16	26	10	8	1	12076
Motor and elevator registers									3
									12079

The meters installed in 1923 were classed as follows:—

Applications of property owners	42
New services	244
General installation	388
Reset	76
Total	750

Meters were removed for the following causes:—

Vacancies and temporary non-use of water . . .	65
Services permanently discontinued	15
Replaced by other meters	38
Total	118

Meters installed yearly on old and new services under the State Compulsory Meterage law, which requires complete meterage of city by the year 1928: —

	Average installation required on old services	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	411	755	344	344	147
1909	411	637	226	570	201
1910	411	501	90	660	169
1911	411	528	117	777	200
1912	411	423	12	789	236
1913	411	432	21	810	255
1914	411	422	11	821	231
1915	411	439	28	849	217
1916	411	434	23	872	203
1917	411	163	248†	624	154
1918	411	82	329†	295	39
1919	411	166	245†	50	23
1920	411	115	296†	246†	45
1921	411	663	252	6	60
1922	411	67	344†	338†	181
1923	411	430	19	319†	244

† Deficiency.

The following table shows the progress of meter installation of Somerville by years and the results therefrom in water consumption: —

Year	Population	Number of Services	Number of Meters	Per Cent Metered		Per Capita Consumption
1897	58,000	9,601	....	....	(Est.)	88
1898	59,000	9,806	143	1.5	"	88
1899	61,000	10,052	226	2.25	"	88
1900	62,000	10,291	202	2	"	88
1901	64,000	10,520	224	2	"	88
1902	66,000	10,710	269	2.5	"	88
1903	68,000	10,854	647	6	"	88
1904	69,000	11,059	1,272	11.5	Met.	89
1905	70,000	11,279	2,092	18.5	"	89
1906	71,000	11,489	2,829	24.5	"	89
1907	72,000	11,662	3,455	29.5	"	90
1908	74,000	11,817	4,333	36.5	"	89
1909	76,000	12,018	5,155	43	"	84
1910	78,000	12,149	5,817	48	"	80
1911	79,000	12,357	6,533	53	"	74
1912	80,000	12,596	7,171	57	"	79
1913	82,000	12,827	7,856	61	"	72
1914	85,000	13,034	8,499	65	"	73
1915	87,000	13,233	9,155	69	"	67
1916	90,000	13,420	9,763	72.75	"	69
1917	91,000	13,509	10,028	74.23	"	73
1918	91,000	13,514	10,116	74.86	"	80
1919	92,000	13,544	10,322	76.21	"	69
1920	93,033	13,554	10,472	77.26	"	77
1921	95,000	13,631	11,190	82.11	"	73
1922	96,000	13,844	11,447	82.68	"	76
1923	98,000	14,045	12,079	86.0	"	81

Summary of Pipes and Fixtures of the Water System

December 31, 1923

Feet of main pipe (approximately)	551,223
Feet of service pipe (approximately)	485,240
Service connections (approximately)	14,045
Public fire hydrants	1,201
Private fire hydrants	66
Gates	2,016
Check Valves	8
Meters	12,079
Motor registers	3
Waterposts	66
Car-sprinkler connections	17
Blow-offs	190
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION.

The annual assessments paid by this city as its proportionate part of the cost and operation of the Metropolitan water works are given below: —

Year	Sinking Fund	Maintenance	Interest	Maturing Bonds	Total
1898......	No division made .				$14,250 19
1899......	" "	"			20,975 58
1900......	" "	"			28,689 24
1901......	$12,491 73	$12,033 79	$32,291 24		56,816 76
1902......	19,014 85	12,955 64	30,427 40		62,397 89
1903......	15,748 56	12,763 10	48,776 77		77,288 43
1904......	16,404 42	15,393 87	54,938 64		86,736 93
1905......	21,358 11	13,666 71	55,535 91		90,560 73
1906......	22,345 50	17,412 51	57,402 07		97,160 08
1907......	25,365 30	18,880 01	62,089 30		106,334 61
1908......	24,865 73	15,221 12	68,604 23		108,691 08
1909......	24,812 23	21,220 56	66,540 41		112,573 20
1910......	25,018 52	18,212 28	66,825 45		110,056 25
1911......	25,424 55	19,573 82	69,849 26	$246 66	115,094 29
1912......	24,469 82	16,111 70	68,205 16	445 46	109,232 14
1913......	24,930 94	20,691 19	70,206 83	491 92	116,320 88
1914......	14,190 98	22,488 71	73,138 81	180 63	109,999 13
1915......	14,164 65	21,376 07	74,111 12	1,129 50	110,781 34
1916......	13,249 71	21,643 98	74,058 98	1,515 62	110,468 29
1917......	13,364 71	28,110 19	75,117 17	1,833 60	118,425 67
1918......	14,193 89	29,185 04	79,975 44	2,004 18	125,358 55
1919......	13,765 81	33,723 64	78,335 58	2,257 87	128,082 90
1920......	12,559 45	37,814 68	74,903 80	2,227 81	127,505 74
1921......	11,956 69	43,942 28	75,848 98	2,241 89	133,989 84
1922......	11,119 49	37,015 40	77,490 17	2,582 78	128,207 84
1923......	10,716 17	42,846 98	82,407 74	3,193 26	139,164 15
					$2,545,161 73

There has been credited to the city by the commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district, and water furnished to water companies the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1923:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	8,350,000	85	July	7,912,000	80
February	8,683,100	88	August	7,920,500	80
March	8,272,300	84	September	7,917,600	80
April	7,964,300	81	October	7,956,300	80
May	7,684,900	78	November	7,735,200	78
June	8,138,200	82	December	7,624,400	77

The consumption for the year was:—

Low-service system	2,286,215,000 gallons
High-service system	636,904,000 gallons
Total consumption	2,923,119,000 gallons
Average daily consumption	8,008,500 gallons
Average daily consumption, per capita, for Somerville	81 gallons
Average daily consumption, per capita, for Metropolitan district	97 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1923, as registered by the Metropolitan meters:

City or Town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	53	55	53	50	56	74	64	63	70	63	51	50	58
Belmont	56	58	60	63	66	85	77	72	82	70	57	55	66
Boston	120	124	117	110	111	112	108	110	113	112	109	110	118
Chelsea	83	90	85	79	76	79	80	79	77	78	75	75	80
Everett	99	107	98	95	94	106	101	101	102	100	96	100	100
Lexington	52	58	57	59	68	91	74	72	75	64	54	48	64
Malden	57	58	57	55	58	56	55	55	58	54	50	48	55
Medford	54	57	56	58	66	61	60	59	58	56	53	52	58
Melrose	60	61	61	59	63	74	72	69	70	71	70	67	66
Milton	44	46	44	41	42	47	38	38	45	44	41	40	41
Nahant	62	63	87	92	130	229	219	202	171	105	97	69	127
Quincy	80	77	77	77	79	86	85	86	83	79	78	77	80
Revere	69	74	70	68	72	83	83	84	77	71	65	64	75
Somerville	85	88	84	81	78	82	80	80	80	80	78	77	81
Stoneham	72	78	77	75	78	81	79	79	79	70	72	67	75
Swampscott	53	57	56	58	69	106	122	104	101	81	68	63	79
Watertown	86	86	77	76	74	83	77	71	75	68	63	60	72
Winthrop	51	53	51	52	54	66	68	66	57	51	48	47	55
Met. Dist.	102	105	100	95	96	99	96	97	98	97	93	93	97

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1923:

	Total Per Day	Per Capita per Day	Services Metered
Milton	452,500	41	100
Malden	2,857,100	55	95
Winthrop	950,100	55	99
Arlington	1,251,100	58	100
Medford	2,563,400	58	100
Lexington	440,700	64	99
Belmont	865,700	66	100
Melrose	1,268,400	66	99
Watertown	1,804,300	72	100
Revere	2,255,800	75	84
Stoneham	615,200	75	100
Swampscott	658,500	79	100
Chelsea	3,646,100	80	90
Quincy	4,175,700	80	91
Somerville	8,008,500	81	86
Everett	4,309,200	100	80
Boston	88,932,800	112	70
Nahant	180,900	127	76
Total District	125,245,000	97	

Operation — Construction — Maintenance

The headquarters of the operating branch of the department are at the water-works yard on Cedar street near Broadway. This is also the emergency station, with a man on duty day and night.

The branch office in the water-works building has been enlarged and greatly improved during the year. Other changes are in progress which will add much to the efficient handling of our yard supplies. Our transportation equipment has been strengthened by the substitution of two 1-ton trucks for two old-timers, worn out and discarded. Further changes in the same direction will soon be required.

Nearly a half mile of street mains were laid in the past year on new and replacement work, with a net increase of 1551 feet in the main pipe mileage making a total of 104.4 miles in the city. The principal renewal work was in Poplar street and a portion of Joy street where the 6″ main was replaced with a 10″ pipe, thus securing more effective fire service in that section. The start made in Joy street should be carried to completion by replacing the remainder of the old 6″ pipe in the street with the larger size.

Construction work has been carried on in several streets where building operations required the extension of water mains. Every new building, where application has been made for water, has been served. The mains of the distributing system throughout the city are, so far as known. in first-class condition.

There were 239 service pipes for new buildings laid during the year, a larger number than for many years past. It would seem that the "saturation point" has now been reached, however, as there are but few areas of any considerable magnitude remaining for development. The following table gives the

Class of Premises Covered by Service Installation:

Apartment house	1
Churches	2
Convent	1
Dwelling houses	202
Factory building; fire pipe	1
Garages; private	9
Garage; public	1
Gasoline filling station	4
Golf course	1
Laundries	2
Lunch cart	1
Milk station	1
Office	1
Recreation building	1
Schoolhouse	1
Stable; fire pipe	1
Stores	6
Storage warehouse	1
Storage warehouse; fire pipe	1
Tenements and stores; block	1
Total service installations	239

Many of the older service pipes continue to give trouble by filling up with a deposit, thus reducing the volume of water received in the houses affected. Over 1300 cases of this kind were treated during the year and it was found very difficult to keep abreast of the complaints. Many of these old pipes will need replacing as the relief gained by cleaning them out seems to be but temporary.

A net gain of 632 was made in the number of operating meters, increasing the total number in the city to over twelve thousand and making the system 86 per cent metered. 244 meters were installed in new buildings, the largest number in any one of the last ten years and with one exception the largest since the passage of the Meterage Act in 1908.

Financial

Water income in 1923 exceeded that of any previous year, rising to over $310.000 and showing a gain of more than $26,000 over the former high record, with a surplus of over $60,000 on the year's business. All department expenses are paid from water income and there were no unpaid bills at the close of the year. There is no funded debt on account of the water-works and current indebtedness is taken care of monthly. From the financial viewpoint, therefore, as well as from the physical, the department seems to be in a sound condition.

Water Consumption

The daily per capita use of water increased in 1923 to 81 gallons, the highest for many years. This increase is reflected in the income from water rates which, as elsewhere stated, was the largest in the history of the water-works, indicating use of the water and not system leakage.

The water waste survey of the city which was begun in 1922 by the Pitometer Company of New York, was completed last year and the result of their work shows that there are no large leakages of water in the distribution system. Only one leak of major importance was discovered, where a lead joint was partly blown out allowing about 85,000 gallons a day to waste into a nearby sewer.

The report of the Pitometer Company concludes with this statement: "The system was found to be in exceptionally good condition, which reflects very favorably on the administration and workmanship of the water department".

Additional Supply

A larger volume of water has been brought into the city by the completion during the year by the Metropolitan District Commission of an additional supply main from near Spot Pond reservoir to our local high-service distribution system, thus building up somewhat the pressure and delivery of water in the districts of the city so covered.

During the process of making the pipe connection between the two systems, while the metropolitan high-service supply was cut off, the experiment was tried of maintaining the pressure in our local high-service system by pumping water with one of our city fire engines from a low-service hydrant into a nearby hydrant on the high-service. The experiment was highly successful, the pressure over the high-service system, covering about one-third of the city, being well kept up and the volume of water ample for the domestic purposes of the residential district supplied.

This report includes tables of interest regarding the water consumption in Somerville and other municipalities in the Metropolitan Water District; tables showing the Metropolitan assessments for water in Somerville and how expended; other conveying detailed financial and operating information with locations and kind of work performed; all of which is respectfully submitted.

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FRANK E. MERRILL,

Water Commissioner.

Street mains, Gates, Hydrants, Etc., Laid, Set, and Removed in 1923

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		REMOVED		SET.		REMOVED		SET.		REMOVED		SET.		REM.		SET.	REM.
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Albion Street	Hydrant Replacement: 14' west from Centre Street.									6"	Corey	6"	Hol. C.						
	Gate on Hydrant Branch: 14' west from west line of Centre Street, 4' out from hydrant.					6"	Renss.												
Allen Street	Hydrant Replacement: 321' south from Somerville Avenue.									6"	Corey	6"	Matt.						
Beacon Street	Hydrant Replacement: 67' east from Park Street.									6"	Corey	6"	Chap.						
	Gate on Hydrant Branch: 67' east from east line of Park Street and 4' out from hydrant.					6"	Renss.												
Benedict Street	Hydrant Replacement: 32' east from Mystic Street.	6"	5	4"	5					6"	Corey	4"	B. Mch.						
	Gate on Hydrant Branch: 32' east from east line of Mystic St. and 3' out from hydrant.					6"	Renss.												
Blakeley Avenue	Street Main: From connection with main pipe in Cross St. East to 8" gate located on west line of Cross Street East.	8"	26																
	Gate: On west line of Cross Street East and 13' 4" north from south line of Blakeley Ave.					8"	Renss.												
Boston Avenue	Street Main: From connection with 10" pipe in Boston Ave. at point 55½' south from the south line (projected) of Prichard Ave. to temporary dead end at point 95½' south from south line of Prichard Ave.	10"	36																
Bow Street Place	Hydrant Replacement: 193' from north line of Bow Street.	"6	6	4"	6					6"	Matt.	4"	Big						
	Gate on Hydrant Branch: 193' north from north line of Bow St. and 4' out from hydrant.					6"	Renss.												
Broadway	Hydrant Replacement: 71' east from Weston Ave.									6"	Corey	6"	Hol. C.						
	Gate on Hydrant Branch: 71' east from east line of Weston Ave. and 2½' out from hydrant.					6"	Renss.												
Central Road	Main Gate Replacement: East line of Central St. 13' 4" north from south line of Central Road.					6"	Renss.	6"	Renss.										
Central Street	Hydrant Replacement: 6' north from Oxford Street.									6"	Hol. G.	6"	Hol. C.						

	Gate on Hydrant Branch: 6' north from north line of Oxford St. and 2' 6" out from hydrant.					6" Renss.		
Chestnut Street	Street Main Replacement: From connection with 10" main pipe in Poplar St. to connection with 6" main pipe in Chestnut St.	6"	10	6"	10			
Concord Avenue	Hydrant Removal: 25' east from Springfield St.							"6 Coffin
	Hydrant: 20' east from Springfield St.	6"	3				6" Hol G.	
	Gate on Hydrant Branch: 20' east from Springfield St. and 5' north from south line of Springfield St. Gate in sidewalk 3' east from hydrant.					6" Renss.		
Cross Street East	Street Main: From connection with 12" main pipe in Cross St. East at point 12' 4" north from south line of Pennsylvania Ave. to connection with 12" main pipe in Cross St. East at point 236' north from north line of Broadway.	12"	276					
	Gate: On south line of Pennsylvania Ave and 13' 4" west from east line of Cross St. East.					12" Renss.		
Cummings Street	Hydrant Removal: 112' north from Middlesex Fells Parkway.			6"	9			6" Corey
	Hydrant: 186' north from Middlesex Fells Parkway.	6"	9				6" Corey	
	Gate on Hydrant Branch: 186' north from north line of Middlesex Fells Parkway and 7' out from hydrant.					6" Renss.		
Dartmouth Street	Hydrant Replacement: 183' south from Broadway.						6" Corey	4" Hol. G.
	Gate on Hydrant Branch: 183' south from south line of Broadway and 4' out from hydrant.					6" Renss.		
Edmonton Avenue	Street Main: From connection with 6" main pipe in Garfield Ave. to 8" gate located on the east line of Fellsway East.	8"	433					
	Gate: 1. On west line of Garfield Ave. 13' 4" north from south line of Edmonton Ave.					8" Renss.		
	2. On east line of Fellsway East 13' 4" north from south line of Edmonton Ave. (No gate line of Edmonton Ave. (No gate box used.)					8" Renss.		
	Hydrant Branch: 13' 8" west from west line of Garfield Ave. and 13' 4" north from south line of Edmonton Avenue. (Hydrant not set.)	6"	4					
	Gate on Hydrant Branch: 13' 8" west from west line of Garfield Ave. and 9' 8" north from south line of Edmonton Ave. (No gate box used.)					6" Renss.		
	Hydrant: 8' east from east line of Fellsway East.	6"	6				6" Corey	
	Gate on Hydrant Branch: 8' east from east line of Fellsway East and 3' 6" out from hydrant.					6" Renss.		

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		Laid.		Removed		Set.		Removed		Set.		Removed		Set.		Rem.		Set.	Rem.
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Endicott Avenue	Hydrant Replacement: 422 ' south from south line of Broadway.									6"	Corey	6"	Hol. G						
Eustis Street	Street Main Replacement: From connection with main pipe in Eustis St. at point 13' south from south line of Beacon St. to point 147" south from south line of Beacon St.	2" 1"	118 16	2"	134														
	Hydrant: 7' south from south line of Beacon St.	6"	7							6"	Corey								
	Gate on Hydrant Branch: 7' south from south line of Beacon St. and 4' out from hydrant.					6"	Renss.												
Fairfax Street	Hydrant: 141' east from east line of Alewife Brook Parkway (Gate on hydrant branch installed in 1922 is 5' out from hydrant.)	6"	4							6"	Corey								
Farragut Avenue	Street Main: From connection with 6" main pipe in Farragut Ave. at point 535' 6" south from south line of Broadway and 8' 5" east from west line of Farragut Ave. to point 739' 6" south from south line of Broadway.	6"	204																
	Location of Pipe: From point 535' 6" south from south line of Broadway the pipe offsets towards the center of street until, at point 544' 6" south from south line of Broadway it is located 13' 4" east from the west line of Farragut Ave. which line is maintained to the end of pipe at point 739' 6" south from south line of Broadway.																		
	Section Gate: 544' 6" south from south line of Broadway.					6"	Renss.												
Garfield Avenue	Connection with 8" main in Edmonton Ave.	8"	4	6"	4														
	Section Gate: On south line of Edmonton Ave. and 13' 4" east from west line of Garfield Ave.					6"	Renss.												
Grove Street	Hydrant Replacement: 163' south from Highland Ave.									6"	Corey	6"	Hol. C.						

	Gate on Hydrant Branch: 163' south from south line of Highland Ave. and 4' out from hydrant.					6"	Renss.			
Hillsdale Road	Street Main: From connection with main pipe in Sunset Road at point 14' north from south line of Sunset Road to north line of Sunset Road.	8"	26							
	Section Gate: On north line of Sunset Road and 13' 4" west from east line of Hillsdale Road.					8"	P. & C.			
Holland Street	Hydrant Replacement: 3' south from Paulina St.								6" Corey	6" Matt.
	Gate on Hydrant Branch: 3' south from south line of Paulina St. and 7' 6" out from hydrant.					6"	Smith			
James Street	Hydrant Removal: 99' north from Pearl St.	6"	6	6"	6					6" Matt.
	Hydrant: 112' north from Pearl St.								6" Matt	
	Gate on Hydrant Branch: 112' north from north line of Pearl St. and 4' out from hydrant.					6"	Renss			
Joy Street	Street Main Replacement: From connection with 10" main pipe in Poplar St. to connection with 6" main pipe in Joy St. at point 323' north from the north line of Poplar St.	10"	344	6"	344					
	Gate: On north line of Poplar St. and 7' 8" east from west line of Joy St.					10"	Chap.			
	Hydrant Replacement: 502' south from Washington St.								6" Corey	6" Chap.
	Gate on Hydrant Branch: 502' south from south line of Washington St. and 4' out from hydrant.					6"	Renss.			
	Hydrant Removal: 272' north from north line of Poplar St.			6"	3					6" Chap.
	Gate on Hydrant Branch Removal: 272' north from the north line of Poplar St.							6" Smith		
	Hydrant: 321' north from north line of Poplar St. (Hydrant is on east side of Joy St.)	6"	17						6" Chap.	
	Gate on Hydrant Branch: 321' north from north line of Poplar St. and 11' out from hydrant.					6"	Renss.			
Kensington Ave.	Street Main: From north line of Edmonton Ave. to the south line of Edmonton Ave.	12"	40							
	Gate: On south line of Edmonton Ave. and 13' 4" east from west line of Kensington Ave.					12"	Renss			
Laurel Terrace	Street Main: From connection with 6" pipe in Laurel St. to point 145' east from east line of Laurel St.	6"	159							
	Gate: On east line of Laurel St. and 7' 6" north from south line of Laurel Terrace.					6"	Renss.			
Lewis Street	Hydrant: 17' east from west line (projected) of Rose St.	6"	22						6" Corey	

STREET	DESCRIPTION	PIPES				GATES.				HYDRANTS				BLOW-OFFS.				WATER POSTS.	
		LAID.		REMOVED		SET.		REMOVED		SET.		REMOVED		SET.		REM.		SET.	REM.
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Lewis Street	Gate on Hydrant Branch: 17' east from west line (projected) of Rose St. and 4' out from hydrant.					6"	Renss.												
London Street	Hydrant Removal: 384' east from Linwood St.			4"	7							6"	Hol. G.						
	Hydrant: 351' east from Linwood St.	6"	7							6"	Hol. G								
	Gate on Hydrant Branch: 351' east from east line of Linwood St. and 3' 6" out from hydrant.					6"	Renss.												
Main Street	Gate on Hydrant Branch: 198' west from Bond St. and 4' out from hydrant.					6"	Renss.												
Maple Avenue	Street Main: From connection with main pipe in Maple Ave. at point 311' east from east line of School St. to dead end at point 320' east from east line of School St.	6"	9																
	Gate on Hydrant Branch: 294' east from east line of School St. and 4' out from hydrant.					6"	Renss.												
Medford Street	Hydrant Replacement: 238' south from Prospect Hill Ave.									6"	Corey	6"	Hol. G						
	Gate on Hydrant Branch: 238' south from south line of Prospect Hill Ave. and 4' out from hydrant.					6"	Renss.												
Mt. Pleasant St.	Hydrant Replacement: 155' north from Perkins St.									6"	Corey	4"	B. Mch.						
	Gate on Hydrant Branch: 155' north from north line of Perkins St. and 4' out from hydrant.					6"	Renss.												
Mystic Avenue	Hydrant Replacement: 36' east from Melrose St.									6"	Corey	6"	Hol. G.						
	Gate on Hydrant Branch: 36' east from east line of Melrose St. and 4' out from hydrant.					6"	Renss.												
	Main Gate Replacement: On east line of Austin St. 21' north from south line of Mystic Ave.					6"	Renss.	6"	Smith										
Oliver Street	Hydrant Replacement: 190' east from Cross St.	6"	2	4"	2					6"	Corey	4"	B. Mch						
Parkdale Street	Hydrant: 56' north from north line of Lewis St. (Gate on this hydrant branch installed in 1922 is 4' out from hydrant.)	6"	4							6"	Corey								

Poplar Street	Hydrant Replacement: (February 1923) 23' west from Joy St.									"6	Corey	6"	Walker
	Gate on Hydrant Branch: (February 1923) 23' west from west line of Joy St. and 3' 6" out from hydrant					6"	Renss.						
	Street Main Rep'acement: From connection with 10' main pipe in Poplar St. at point 4' east from east line of Linwood St. to connection with 10" main pipe in Joy St.	10"	290	6"	290								
	Section Gate: On west line of Chestnut St. and 11' 8" north from south line of Poplar St.					10"	Chap.	6"	Chap.				
	Hydrant Removal: (December 1923) 23' west from west line of Joy St.			6"	15							6"	Corey
	Gate on Hydrant Branch Removal: (December 1923) 23' west from west line of Joy St.							6"	Ruess.				
	Hydrant: 45' 5" west from west line of Joy St.	6"	15							6"	Corey		
	Gate on Hydrant Branch: 45' 5" west from west line of Joy St. and 5' out from hydrant.					6"	Renss.						
	Gate on Hydrant Branch: 23' east from east line of Linwood St. and 4' out from hydrant.					6"	Renss.						
Porter Street	Hydrant Replacement: 1' north from Mountain Ave.									6"	Corey	6"	Chap.
	Gate on Hydrant Branch: 1' north from north line of Mountain Ave. and 5' out from hydrant.					6"	Renss.						
Prospect Street	Hydrant Replacement: 156' south from Oak St.									6"	Corey	6"	Matt.
	Gate on Hydrant Branch: 156' south from south line of Oak St. and 4' out from hydrant.					6"	Renss.						
	Hydrant Replacement: 119' east from Bennett St.									6"	Corey	6"	Hol G.
	Gate on Hydrant Branch: 119' east from east line of Bennett St. and 3' out from hydrant.					6"	Renss.						
Somerville Avenue	Hydrant Replacement: 106' east from Carlton St.									6"	Corey	6"	Hol. G.
	Gate on Hydrant Branch: 106' east from east line of Carlton St. and 4' out from hydrant.					6"	Renss.						
	Gate on Hydrant Branch: 183' west from west line of Hawkins St. and 4' out from hydrant.					6"	Renss.						
	Gate on Hydrant Branch: 88' west from west line of Quincy St. and 4' out from hydrant.					6"	Renss.						
	Gate on Hydrant Branch: 100' east from east line of Granite St. and 4' out from hydrant.					6"	Renss.						
Springfield Street	Hydrant Replacement: 177' south from Houghton St.									6"	Corey	6"	Chap.
	Gate on Hydrant Branch 177' south from south line of Houghton St. and 2½' out from hydrant.					6"	Renss.						
Summer Street	Hydrant Replacement: 51' west from Preston Road.									6"	Corey	6"	Coffin

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS.	
		LAID.		REMOVED		SET.		REMOVED		SET.		REMOVED		SET.		REM.		SET.	REM.
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	No	Size.	No.	No.	No.
Upland Road	Street Main: From connection with 8" main pipe in Upland Rd. at point 126' west from west line of Curtis St. to temporary dead end at point 390' 6" west from west line of Curtis St.	8"	265																
	Section Gate: 358' west from west line of Curtis St.					8"	Renss.												
	Hydrant Branch: 353' 6" west from west line of Curtis Street.	6"	4																
	Gate on Hydrant Branch: 353' 6" west from west line of Curtis St. and 9' 6" north from south line of Upland Road.					6"	Renss.												
West Street	Hydrant Removal: 143' north from Highland Ave			4"	5							6"	Hol. G.						
	Hydrant: 70' north from Highland Ave.	6"	8							6"	Corey.								
	Gate on Hydrant Branch: 70' north from north line of Highland Ave. and 4' out from hydrant.					6"	Renss.												
West Quincy St.	Hydrant Replacement: 88' north from Bailey St.									6"	Chap.	6"	Walker						
	Gate on Hydrant Branch: 88' north from north line of Bailey St. 4' 6" out from hydrant.					6"	Renss.												
Woods Avenue	Hydrant: 495' west from west line of North St. (Gate on this hydrant branch installed in 1922 is 5' 6" out from hydrant.)	6"	2							6"	Corey								
	Hydrant: 323' east from east line of Alewife Brook Parkway. (Gate on this hydrant branch installed in 1922 is 4' 6" out from hydrant.)	6"	4							6"	Corey.								
			2391		840	52		5		38		31			0		0	0	0

SUMMARY OF STATISTICS

FOR THE YEAR ENDING DECEMBER 31, 1923

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics

Population, census 1920, 93,033; present, estimated 98,000.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1923, 98,000.
Population supplied, Dec. 31, 1923, 98,000.
Total consumption for the year, 2,923,119,000 gallons.
Average daily consumption, 8,008,500 gallons.
Gallons per day to each inhabitant, 81.

Statistics Relating to Distribution System, 1923

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 2,391 feet; discontinued 840 feet; net extension, 1,551 feet.
Total now in use, 104.4 miles.
Number of hydrants added during year (public, 7; private, 0) 7.
Number of hydrants (public and private) now in use, 1,267.
Number of stop gates added during year, 47.
Number of stop gates now in use, 2,016.
Number of blow-offs, 190.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron.
Sizes, one-half to eight inches.
Extended 8,705 feet; discontinued 1,270 feet.
Total now in use 91.9 miles.
Number of service taps added, 239; discontinued, 38; increase, 201.
Number now in use, 14,045.
Number of meters added, 750; meters and motor registers discontinued, 118; net increase, 632.
Number now in use, 12,079.
Percentage of services metered, 86.
Percentage of water receipts from metered service, 91.3.
Number of motors and elevator registers added, 0; removed, 0.
Number now in use, 3 (included in number of meters).

REVENUE

From Water Rates:—		
Fixture rates . . .	25,271 31	
Meter rates . . .	264,940 72	
Total from consumers .		$290,212 03
From other sources:—		
Water service assessments		$12,471 05
Labor and materials		7,606 82
Total		$310,289 90

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, repairs and renewals)	$74,824 56	
Special:—		
Miscellaneous accounts .	7,606 82	
Total		$82,431 38
Water Works Buildings		2,155 26
Water Works Construction:—		
Mains	$9,377 35	
Services	10,139 72	
Meters	6,263 29	
Total construction		$25,780 36
Metropolitan water assessment . .		139,164 15
Balance		60,758 75
Total		$310,289 90

Disposition of balance: applied to municipal purposes	
Cost of works to date	$1,153,527 01
Bonded debt at date	None

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Annual Report

of the

Water Commissioner

of the

City of Somerville
Massachusetts
1924

502

ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

MASSACHUSETTS

For the Year 1924

51st

Somerville Press Print.
1925.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO, MASSACHUSETTS

Settled, when part of Charlestown, 1630
(Home of Colonial Governor John Winthrop)
Incorporated a town, 1842
Established a city, 1872

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet
Highest building elevation in the city 145 feet
Area of city, including land and water, about 4.22 square miles
Land, 2,461.50 acres; water and marsh, 238.50 acres
Population, 1920 census, 93,033
Present population, estimated, 100,000
Entire population on line of pipe and supplied with water

Water works owned by City of Somerville
Construction commenced in 1868
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds
High service 45 to 100 pounds

Mayor

HON. JOHN M. WEBSTER

Water Commissioner

FRANK E. MERRILL

Office of the Water Department

Room 10, City Hall

Department Buildings and Yard

Cedar street, near Broadway

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS:

1868-1871

SOMERVILLE MYSTIC WATER COMMITTEE (5)

Acts 1868; Chap. 202

1872 — 1890

SOMERVILLE MYSTIC WATER BOARD (5)

Acts 1871; Chap. 182

1891 — 1897

SOMERVILLE MYSTIC WATER BOARD (3)

Acts 1890; Chap. 218

1898 — 1899

BOARD OF WATER COMMISSIONERS (3)

Acts 1898; Chap. 33

1900 —

WATER COMMISSIONER (1)

Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER

OFFICE OF THE WATER COMMISSIONER,
January, 1925.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1924, this being the fiftieth annual report of the water department and my twenty-fourth as water commissioner: 51st

Revenue and Expenditures

Water bills have been issued as follows:—

"Annual" water charges, amounting to			$19,917 25
"Additional" water charges, amounting to			1,255 89
"Metered" water charges, amounting to			265,081 12
			$286,254 26
Abatements and refunds			3,128 74
Income from sale of water			$283,125 52
Receipts; water service assessments		$8,559 72	
Receipts; labor and materials sold:—			
Misc. accounts charged	$11,412 35		
Abatements	724 41	10,687 94	
			19,247 66
Total income of water works			$302,373 18

This amount was used as follows:—

For water works purposes:—

Under Control of the Water Commissioner

Water Works Maintenance		$69,720 13	
Water Works Extension		34,114 72	
Miscellaneous accounts:			
Maintenance	$10,687 94		
Extension	894 62	11,582 56	
			$115,417 41

Not Under Control of Water Commissioner

Metropolitan water works assessment	$142,275 86	
Maintenance water works buildings	2,983 36	
		$145,259 22

For other municipal purposes:—

Not Under Control of the Water Commissioner

Surplus	$41,696 55
Total	$302,373 18

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements

WATER MAINTENANCE ACCOUNT

Appropriations made by Board of Aldermen		$84,200 00
Department accounts; receipts		1,344 28
Water works extension account; receipts		26,216 07
Refund		2 46
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$69,720 13	
Amount expended for materials used in extension of the water works	26,216 07	
Miscellaneous accounts	10,687 94	
Labor and materials furnished municipal departments	1,344 28	
Expenditure refund	2 46	
Extension Account; amount refunded	894 62	
Balance	2,897 31	
	$111,762 81	$111,762 81

WATER WORKS EXTENSION ACCOUNT

Appropriations made by Board of Aldermen		$35,000 00
Water Maintenance account: refunds		894 62
Amounts paid Water Maintenance Account	894 62	
Amount expended for labor and materials used in extension of the water works	$34,114 72	
Balance	885 28	
	$35,894 62	$35,894 62

Cost of Water Works

The total cost of water works on December 31, 1923, as represented by the expenditures from appropriations for water works extension was	$1,153,527 01
Expended during the year 1924, on extension account	$ 34,114 72
Total expenditures, December 31, 1924	$1,187,641 73

Water Works Income from 1898 and its Distribution

The water income and its distribution from 1898 to 1924, inclusive, is shown in the following table:—

Total water income	$6,562,499 25
Distribution:—	

Water Works Account

Water works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$1,764,549 82	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments . .	2,687,437 59	
Maintenance Water Works buildings .	14,755 72	
		$4,827,318 13

Other Municipal Accounts

Various municipal departments through specific appropriations and general revenue account	$1,735,181 12
	$6,562,499 25

Water Distribution System—Construction

STREET MAINS

Approximate number of feet of street mains in the city, January 1, 1924. (including hydrant branches and blow-offs)		551,223
Feet of street mains laid in 1924	3,969	
Feet of hydrant branches laid in 1924 . . .	111	
Feet of blow-off branches laid in 1924 . . .	2	
Feet of inter-city connection laid in 1924 . .	43	
Total feet of pipe laid	4,125	
Feet of pipe removed or replaced	52	
Net increase in feet of pipe		4,073
Total approximate feet of pipe in the city . .		555,296
Total pipe mileage, approximately		105.1

The sizes and lengths of pipe laid out and discontinued are as follows:

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
¾"	0	0	6"	197	32
1"	0	0	8"	1,124	0
2"	165	20	10"	465	0
4"	0	0	12"	2,174	0

The pipes constructed and replaced during the year are as follows:—

Constructed	Size	Feet Laid	Feet Discontinued	Size Discontinued
Boston Ave.	10"	465		
Boston Ave. (Western end)	12"	463		
Broadway	2"	122		
Hillsdale Road	8"	174		
Irvington Road	8"	653		
Laurel Terrace	6"	94		
Mystic Valley Parkway	12"	989		
Talbot Ave.	12"	688		
Upland Road	8"	278		
Yorktown St.	2"	23		
Inter-City Connection	12"	34		
	8"	9		
Replaced:				
Washington Ave.	2"	20	20	2"
Hydrant Branches:	6"	103	32	6"
and Blow-offs	8"	10		
		4,125	52	

Hydrants, Gates, etc.

Number of fire hydrants in city January 1, 1924		1,201	
Number set during year	35		
Number removed during the year	23		
Net increase in number of hydrants		12	
Total number of public fire hydrants			1,213
Number of private fire hydrants, January 1, 1924		66	
Number added		0	
Total number of private fire hydrants receiving their supply from the city mains		66	

Number of gates in city, January 1, 1924			2,016
Number set during the year for streets	13		
Number of section gates set	8		
Number set on hydrant branches	34		
Number set on blow-off branches	1		
Number set on car-sprinkler connections	0		
		56	
Number of street gates removed	5		
Number of section gates removed	2		
Number of waterpost gates removed	1		
Number of blow-off gates removed	0		
Number of hydrant branch gates removed	4		
		12	
Net increase in number of gates			44
Total number of gates in city			2,060

Number of check-valves in city			8
Number of blow-offs in city January 1, 1924		190	
Number added during the year	0	0	
Number discontinued	0	0	
Total number of blow-offs			190

Number of waterposts in city January 1, 1924		66	
Number removed during the year		1	
Total number of waterposts			65

Number of drinking fountains in city			8
Number of car-sprinkler connection in city			17

Water Services

Number of services in city January 1, 1924 (approximately)		14,045	
Number laid during the year	159		
Number permanently discontinued	15		
Net increase in services		144	
Total number of water services in city			14,189
Amount received for services laid in 1924			$8,559.72
Number feet service pipe in city January 1, 1924 (city and private) approximately			485,240
Number of feet laid during the year	5,333		
Number of feet discontinued	573		
Increase in feet of service pipe			4,760
Total feet service pipe (city and private) (approximately)			490,000
Total service mileage (approximately)			92.8

Size, number and length of services installed in 1924:—

1-⅝"-12'	141-¾"-4754'	9-1"-347'	1-1½"-48'
4-2"-92'	1-4"-38'	2-6"-42'	

Number of fire services installed during 1924 (Included in above)	2

Location of Fire Services	No.	Size
Somerville Ave., No. 517; Wm. E. Cotter Spring Hill Garage	1	6"
South St., No. 33; Art Craft Box Co. Factory Building	1	6"

Water Meters

Number of water meters in city, January 1, 1924		12,079
Number installed during the year, new	974	
Number reset	118	
	1,092	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	159	
Net increase in number of operating meters		933
Total number of meters in service		13,012
Number of motor registers (included in above)		3
Per cent. of all services metered		91.6

Operating Meters December 31, 1924

Size	⅝"	¾"	1"	1½'	2"	3"	4"	6"	Total
No.	12566	285	105	17	25	12	8	1	13,009
Motor and elevator registers									3
									13,012

The meters installed in 1924 were classed as follows:—

Applications of property owners	18
New services	163
General installation	793
Reset	118
Total	1,092

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	92
Services permanently discontinued	6
Replaced by other meters	61
Total	159

Meters installed yearly on old and new services under the State Compulsory Meterage law, which requires complete meterage of city by the year 1928: —

	Average installation required on old services	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	411	755	344	344	147
1909	411	637	226	570	201
1910	411	501	90	660	169
1911	411	528	117	777	200
1912	411	423	12	789	236
1913	411	432	21	810	255
1914	411	422	11	821	231
1915	411	439	28	849	217
1916	411	434	23	872	203
1917	411	163	248†	624	154
1918	411	82	329†	295	39
1919	411	166	245†	50	23
1920	411	115	296†	246†	45
1921	411	663	252	6	60
1922	411	67	344†	338†	181
1923	411	430	19	319†	244
1924	411	811	400	81	163

† Deficiency.

The following table shows the progress of meter installation of Somerville by years and the results therefrom in water consumption: —

Year	Population	Number of Services	Number of Meters	Per Cent Metered		Per Capita Consumption
1897	58,000	9,601	....	....	(Est.)	88
1898	59,000	9,806	143	1.5	"	88
1899	61,000	10,052	226	2.25	"	88
1900	62,000	10,291	202	2	"	88
1901	64,000	10,520	224	2	"	88
1902	66,000	10,710	269	2.5	"	88
1903	68,000	10,854	647	6	"	88
1904	69,000	11,059	1,272	11.5	Met.	89
1905	70,000	11,279	2,092	18.5	"	89
1906	71,000	11,489	2,829	24.5	"	89
1907	72,000	11,662	3,455	29.5	"	90
1908	74,000	11,817	4,333	36.5	"	89
1909	76,000	12,018	5,155	43	"	84
1910	78,000	12,149	5,817	48	"	80
1911	79,000	12,357	6,533	53	"	74
1912	80,000	12,596	7,171	57	"	79
1913	82,000	12,827	7,856	61	"	72
1914	85,000	13,034	8,499	65	"	73
1915	87,000	13,233	9,155	69	"	67
1916	90,000	13,420	9,763	72.75	"	69
1917	91,000	13,509	10,028	74.23	"	73
1918	91,000	13,514	10,116	74.86	"	80
1919	92,000	13,544	10,322	76.21	"	69
1920	93,033	13,554	10,472	77.26	"	77
1921	95,000	13,631	11,190	82.11	"	73
1922	96,000	13,844	11,447	82.68	"	76
1923	98,000	14,045	12,079	86.0	"	81
1924	100,000	14,189	13,012	90.6	"	77

Summary of Pipes and Fixtures of the Water System
December 31, 1924

Fee of main pipe (approximately)	555,296
Feet of service pipe (approximately)	490,000
Service connections (approximately)	14,189
Public fire hydrants	1,213
Private fire hydrants	66
Gates	2,060
Check Valves	8
Meters	13,012
Motor registers	3
Waterposts	65
Car-sprinkler connections	17
Blow-offs	190
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION.

The annual assessments paid by this city as its proportionate part of the cost and operation of the Metropolitan water works are given below: —

Year	Sinking Fund	Maintenance	Interest	Maturing Bonds	Total
1898......	No division made				$14,250 19
1899......	"	"	"		20,975 58
1900......	"	"	"		28,689 24
1901......	$12,491 73	$12,033 79	$32,291 24		56,816 76
1902......	19,014 85	12,955 64	30,427 40		62,397 89
1903......	15,748 56	12,763 10	48,776 77		77,288 43
1904......	16,404 42	15,393 87	54,938 64		86,736 93
1905......	21,358 11	13,666 71	55,535 91		90,560 73
1906......	22,345 50	17,412 51	57,402 07		97,160 08
1907......	25,365 30	18,880 01	62,089 30		106,334 61
1908......	24,865 73	15,221 12	68,604 23		108,691 08
1909......	24,812 23	21,220 56	66,540 41		112,573 20
1910......	25,018 52	18,212 28	66,825 45		110,056 25
1911......	25,424 55	19,573 82	69,849 26	$246 66	115,094 29
1912......	24,469 82	16,111 70	68,205 16	445 46	109,232 14
1913......	24,930 94	20,691 19	70,206 83	491 92	116,320 88
1914......	14,190 98	22,488 71	73,138 81	180 63	109,999 13
1915......	14,164 65	21,376 07	74,111 12	1,129 50	110,781 34
1916......	13,249 71	21,643 98	74,058 98	1,515 62	110,468 29
1917......	13,364 71	28,110 19	75,117 17	1,833 60	118,425 67
1918......	14,193 89	29,185 04	79,975 44	2,004 18	125,358 55
1919......	13,765 81	33,723 64	78,335 58	2,257 87	128,082 90
1920......	12,559 45	37,814 68	74,903 80	2,227 81	127,505 74
1921......	11,956 69	43,942 28	75,848 98	2,241 89	133,989 84
1922......	11,119 49	37,015 40	77,490 17	2,582 78	128,207 84
1923......	10,716 17	42,846 98	82,407 74	3,193 26	139,164 15
1924......	10,620 44	42,583 87	85,035 59	4,035 96	142,275 86
					$2,687,437 59

There has been credited to the city by the commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district, and water furnished to water companies the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1924:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	**7,985,600**	**80**	**July**	**8,083,800**	**80**
February	**8,018,200**	**80**	**August**	**7,775,200**	**77**
March	**7,487,300**	**75**	**September**	**7,759,300**	**77**
April	**7,718,300**	**77**	**October**	**7,632,500**	**76**
May	**7,441,000**	**74**	**November**	**7,582,200**	**75**
June	**7,902,300**	**79**	**December**	**7,749,200**	**77**

The consumption for the year was:—

Low-service	**2,181,297,000 gallons**
High-service system	**658,889,000 gallons**
Total consumption	**2,840,186,000 gallons**
Average daily consumption	**7,760,100 gallons**
Average daily consumption, per capita, for Somerville	**77 gallons**
Average daily consumption per capita, for Metropolitan district	**95 gallons**

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1924 as registered by the Metropolitan meters:

City or town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	53	53	52	52	59	62	79	63	59	62	58	59	59
Belmont	56	57	58	59	61	70	89	70	63	64	63	62	64
Boston	122	118	113	107	105	106	110	109	112	110	108	115	111
Chelsea	82	81	77	75	71	73	77	77	76	74	75	79	76
Everett	104	103	98	94	90	96	103	107	107	106	101	115	102
Lexington	50	49	51	55	58	71	94	75	65	69	68	64	64
Malden	49	49	49	51	49	50	62	57	59	57	54	58	54
Medford	54	54	54	51	52	55	57	52	53	53	51	52	53
Melrose	64	63	61	58	61	69	75	67	66	66	65	57	64
Milton	42	44	44	45	44	47	51	45	46	50	52	55	47
Nahant	60	55	62	77	103	194	261	278	182	107	76	57	126
Quincy	78	77	76	76	79	87	94	93	89	85	74	75	82
Revere	68	68	65	67	71	75	89	89	81	75	70	71	74
Somerville	80	80	75	77	74	79	80	77	77	76	75	77	77
Stoneham	68	70	70	72	73	77	82	80	80	77	66	63	73
Swampscott	67	69	62	64	77	104	137	121	102	83	93	65	87
Watertown	65	60	59	57	57	63	72	64	66	67	64	68	63
Winthrop	47	48	49	48	49	59	74	71	60	54	50	49	55
Met. Dist.	101	99	95	91	90	93	98	96	97	95	93	98	95

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1924:

	Total Per Day	Per Capita Per Day	Services Metered
Milton	537,000	47	100
Medford	2,441,400	53	100
Malden	2,859,900	54	99
Winthrop	969,000	55	100
Arlington	1,395,000	59	100
Watertown	1,657,100	63	100
Belmont	887,200	64	100
Lexington	448,000	64	99
Melrose	1,247,400	64	100
Stoneham	600,900	73	100
Revere	2,293,300	74	100
Chelsea	3,551,700	76	100
Somerville	7,760,100	77	92
Quincy	4,352,400	82	91
Swampscott	731,100	87	100
Everett	4,491,500	102	80
Boston	87,680,900	111	70
Nahant	195,800	126	76
Total District	124,099,700	95	

Operation — Maintenance — Construction

Operation and maintenance of the department has been mostly of a routine nature. A systematic inspection and recording of all fire hydrants was made and many of the street gates were packed and oiled. Our transportation equipment has been still further strengthened and for the first time may be said to be in fairly satisfactory condition, although experience is demonstrating that our lighter type of trucks is not dependable for service in cold weather or in deep snow. An acquisition of special benefit to the department is a steam truck, of use at all times as a carrier and of especial value in the winter season for thawing hydrants and other waterworks fixtures that may become frozen. The body and cab of this outfit were built in our department shop by our own men who also rigged up the thawing device and converted the second-hand touring car into a serviceable and up-to-date truck.

A large shed has been erected in our pipe yard by the building department for the storage of special castings, valves and small parts needed in our work, and has demonstrated its usefulness.

An event of much importance in our clerical department was the return to our General Office in September after an enforced absence of six months during the remodeling of City Hall. While this work was going on the department was temporarily quartered on the top floor of the reconstructed portion of the building.

The new quarters, while in substantially the same location as the old office are more spacious, lighter and better adapted to carrying on the department work and all the clerks and the water commissioner are greatly pleased with the changes.

The outstanding construction work of the year has been the installation of over 3,000 feet of street mains in the western part of the city to provide water supply to new houses in that section; the installation of nearly 700 feet of 12″ pipe in Talbot avenue to provide an additional feeder to the high-service system of the city, and the installation of nearly 1,000 new water meters.

An inter-city connection between the low-service system of Somerville and that of the city of Medford was made in Boston avenue at Mystic Valley Parkway, that may be used by either city in emergencies.

The number of new service connections made was 80 less than that of the previous year. The nature of premises supplied by these services is shown in the following table:

Apartment Houses	2
Battery Stations	2
Churches	2
Court House	1
Dwelling House	121
Dwelling & Store	1
Factories	3
Factory: Fire pipe	1
Garages: Private	10
Garage: Public	1
Garage: Fire pipe	1
Laundries	2
Lunch Room	1
Office Buildings	2
School	1
Stores	5
Tenements & Stores (Blocks)	2
Voting House	1
	159

Water Consumption

The water consumption in our city dropped to a daily average per capita of 77 gallons from an average of 81 gallons in the previous year. The city is now so nearly metered that the changes in the per capita consumption indicate with a fair degree of accuracy the variation in the income to the city from the sale of water.

The records show that this drop of four gallons a day in the per capita water consumption was accompanied by a falling off for the year of about $7,000 in the income from the sale of water.

This drop in water consumption and income has a sort of reflex action on the State's Metropolitan Water Assessment so that what is lost in water income through decreased consumption may be offset in the charge for water levied by the commonwealth.

Financial

The department books closed with unexpended balances on the original appropriations in both Water Maintenance and Water Works Extension accounts and all bills contracted during the year have been paid. There being no bonded debt there was, therefore, no water-works indebtedness of any kind at the end of the year.

Water Rate Lien Law

Chapter 391 of the Acts of 1923, Mass. Legislature, entitled "An Act Relative to Collection of Water Rates" was accepted by the Board of Aldermen and approved by the Mayor in March last.

This Act provides that unpaid water bills may under certain conditions become a lien on real estate and that the property may be sold by the city to satisfy its claim. It does not, however, deprive the city of the power of the shut-off wrench to enforce payments from delinquents.

Pensioners

Two of our department pensioners have passed to the great beyond during the year and tribute is here paid to the names and memory of these men:

Thomas Fitzpatrick,
John Brady,

who during their long period of employment served the city efficiently and faithfully and held the esteem and respect of all thir associates.

There are now seven former employees of this department on the payroll of pensioners.

Conclusion

The tables which follow are of value for reference and are made a part of this report.

Respectfully submitted,

FRANK E. MERRILL,

Water Commissioner.

Street Mains, Gates, Hydrants, Etc., Laid, Set & Removed In 1924

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		REMOVED		SET.		REMOVED		SET.		REMOVED		SET.		REM.		SET.	REM.
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No.	No.
Alewife Brook Parkway	Hydrant: 77′ north from Fairfax Street.	6″	4							6″	Chap.								
	Gate on Hydrant Branch: (Set in 1923) 77′ north from north line of Fairfax Street in sidewalk 4′ back of hydrant.																		
Benton Road	Hydrant Replacement: 2′ north from Cambria Street.									6″	Corey	6″	Hol. C.						
	Gate on Hydrant Branch: 2′ north from north line of Cambria Street; 4′ out from hydrant.					6″	Renss.												
Boston Avenue	Street Main: From connection with 10″ gate in Boston Avenue on north line of Kidder Avenue 13′ 4″ west from east line of Boston Avenue, to connection with 10″ main pipe in Boston Avenue at point 95′ 6″ south from south line of Prichard Avenue; 13′ 4″ east from west line of Boston Avenue. Pipe crosses Boston Avenue from the east to the west side about 300′ north from Kidder Avenue and at this point is 16′ 8″ east from west line of Boston Avenue.	10″	465																
	Section Gate: On north line of Prichard Avenue 16′ 8″ east from west line of Boston Avenue.					10″	Renss.												
	Section Gate Replacement: On north line of Kidder Avenue; 13′ 4″ west from east line of Boston Avenue.					10″	Renss.	8″	P & C										
	Hydrant: 263′ 6″ north from Kidder Avenue.	6″	9							6″	Corey								
	Gate on Hydrant Branch: 263′ 6″ north from north line of Kidder Avenue; 4′ out from hydrant.					6″	Renss.												
	Waterpost Removal: From opposite Prichard Avenue.							2″	Chap.										1
Boston Avenue (Western End)	Street Main: From connection with 12″ main pipe in Mystic Valley Parkway to connection with 8″ main pipe in Irvington Road.	12″	463																
	Gate: On east line of Mystic Valley Parkway; 5′ north from south line of Boston Avenue.					12″	Renss.												

	Hydrant: 85' east from Mystic Valley Parkway.	6"	4					6" Chap.		
	Gate on Hydrant Branch: In sidewalk 82' 6" east from east line of Mystic Valley Parkway; 2' 6" west from hydrant.					6" Renss.				
	Hydrant: 3' west from Irvington Road.	6"	4					6" Chap.		
	Gate on Hydrant Branch: In sidewalk 3' west from west line of Irvington Road; 2' 6" west from hydrant.					6" Renss.				
	Blow-off Gate: 5' north from south line of Boston Avenue; 10' 8" west from east line of Mystic Valley Parkway. (Blow-off not yet connected with sewer).	6"	2			6" Renss.				Not Conn.
	Inter-City Connection: Between the City of Somerville 12" main in Boston Avenue at point 5' north from south line of Boston Avenue (in sidewalk); 6' west from east line of Mystic Valley Parkway; and City of Medford 12" main at point 12' south from north line of Boston Avenue; 4' west from east line of Mystic Valley Parkway.	12" 8"	34 9							
	Inter-City Gate: In iron chamber; 41' 6" north from south line of Boston Avenue; 4' west from east line of Mystic Valley Parkway.					8" Renss.				
Broadway	Street Main: From connection with Kensington Avenue main to point 106' west from west line of Kensington Avenue (in Broadway sidewalk 12' south from north line of Broadway).	2"	122							
	Gate: On west line of Kensington Avenue; 12' south from north line of Broadway.					2" Chap.				
	Hydrant Replacement: 33' west from Walnut Street.							6" Corey	6" Coffin	
	Gate on Hydrant Branch: 33' west from west line of Walnut Street; 4' out from hydrant.					6" Renss.				
City Road	Hydrant Replacement: Health Department Yard.							4" Hol. G.	6" P & C	
Claremon Street	Hydrant Replacement: 254' south from Holland Street.							6" Hol. G.	4" Big.	
	Gate on Hydrant Branch: 254' south from south line of Holland Street; 4' out from hydrant.					6" Renss.				
Conwell Avenue	Section Gate: On west line of Hillsdale Road: 13' 4" north from south line of Conwell Avenue.					10" Chap.				
Cross Street	Hydrant Removal: 13' south from Auburn Avenue.			6"	5				6" Corey	
	Gate on Hydrant Branch Removal: 13' south from south line of Auburn Avenue; 4' out from hydrant.						6" Smith			
	Hydrant Removal: 71' north from Flint Street.			6"	6				6" Chap.	
	Hydrant Removal: 15' north from Gilman Street.			6"	6				6" Chap.	
Cross Street Place	Hydrant Replacement: 7' west from Cross Street.							6" Matt.	6" Hol. G.	
Curtis Street	Hydrant Removal: 6' north from Broadway.								6" Hol. C.	
	Hydrant: 9' north from Broadway.							6" Corey		

Street Mains, Gates, Hydrants Etc. Laid, Set & Removed in 1934

STREET

LOCATION

Hydrant ... north line ...
... on Hydrant Branch ...
... north line of ...
... of hydrant
... Branch ...
... in Boston Avenue
... south line of Prichard
... west line of Boston
Boston Avenue from the
... about 200' north from ...
... this point is 16' 8" east from
Avenue.
... line of Prichard Avenue to
... line of Boston Avenue
... the north line of Kidder
... east line of Boston
Kidder Avenue
... 8" north from north
... from hydrant
... site Prichard Ave.
... 12" main pipe in
... connection with 8"
... Valley Parkway; 5'
... line ... Boston Avenue

10" 106
6" 9
12" 481

10" Renss.
10" Renss.
6" Renss.
12" Renss.
6" Chap.
6" Corey

	[illegible] Valley Parkway.	6"	4					6" Chap.		
	[illegible] sidewalk 82' 6" east from [illegible] Valley Parkway; 2' 6" west from [illegible]					6" Renss.				
	[illegible] 3' west from Irvington Road.	6"	4					6" Chap.		
	[illegible] Branch: In sidewalk 3' west from [illegible] Irvington Road; 2' 6" west from [illegible]					6" Renss.				
	[illegible] from south line of Boston [illegible] from east line of Mystic [illegible]-off not yet connected	6"	2			6" Renss.				Not Conn.
	[illegible] ween the City of Somer[illegible] on Avenue at point 5' north [illegible] line of Boston Avenue (in sidewalk); [illegible] from east line of Mystic Valley Parkway [illegible] and City of Medford 12" main at point [illegible] from north line of Boston Avenue; [illegible] from east line of Mystic Valley Parkway.	12" 8"	34 9							
	[illegible] Gate: In iron chamber; 41' 6" north from [illegible] line of Boston Avenue; 4' west from east line of Mystic Valley Parkway.					8" Renss.				
Broadway	Street Main: From connection with Kensington Avenue main to point 106' west from west line of Kensington Avenue (in Broadway sidewalk 12' south from north line of Broadway).	2"	122							
	Gate: On west line of Kensington Avenue; 12' south from north line of Broadway.					2" Chap.				
	Hydrant Replacement: 33' west from Walnut Street.							6" Corey	6" Coffin	
	Gate on Hydrant Branch: 33' west from west line of Walnut Street; 4' out from hydrant.					6" Renss.				
City Road	Hydrant Replacement: Health Department Yard.							4" Hol. G.	6" P & C	
Claremon Street	Hydrant Replacement: 254' south from Holland Street.							6" Hol. G.	4" Big.	
	Gate on Hydrant Branch: 254' south from south line of Holland Street; 4' out from hydrant.					6" Renss.				
Conwell Avenue	Section Gate: On west line of Hillsdale Road; 13' 4" north from south line of Conwell Avenue.					10" Chap.				
Cross Street	Hydrant Removal: 13' south from Auburn Avenue.			6"	5				6" Corey	
	Gate on Hydrant Branch Removal: 13' south from south line of Auburn Avenue; 4' out from hydrant.						6" Smith			
	Hydrant Removal: 71' north from Flint Street.			6"	6				6" Chap.	
	Hydrant Removal: 15' north from Gilman Street.			6"	6				6" Chap.	
Cross Street Place	Hydrant Replacement: 7' west from Cross Street.							6" Matt.	6" Hol. G.	
Curtis Street	Hydrant Removal: 6' north from Broadway.								6" Hol. C	
	Hydrant: 9' north from Broadway.							6" Corey		

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS	
		LAID.		REMOVED		SET.		REMOVED		SET.		REMOVED		SET.		REM.		SET.	REM.
		Size.	Feet.	Size.	Feet.	Size.	Kind	Size.	Kind	Size.	Kind	Size.	Kind	Size.	No.	Size.	No.	No	No.
	Gate on Hydrant Branch: 9' north from north line of Broadway; 4 ft. out from hydrant.					6"	Renss.												
Dell Street	Hydrant Removal: 255' west from Glen Street.			6"	5							6"	Hol. G.						
	Hydrant: 260' west from Glen Street.	6"	5							6"	Corey								
	Gate on Hydrant Branch: 260' west from west line of Glen Street; 4' out from hydrant.					6"	Renss.												
Endicott Avenue	Gate on Hydrant Branch: 423' south from south line of Broadway; 4' out from hydrant.					6"	Renss.												
	Section Gate: 426' south from south line of Broadway: 13' east from west line of Endicott Avenue.	6,	2			6"	Coffin												
Everett Street	Main Gate Replacement: On east line of Webster Avenue; 10' south from north line of Everett Street.					6"	Renss.	6"	Wood										
Fairfax Street	Hydrant: 435' west from North Street.	6"	2							6"	Corey								
	Gate on Hydrant Branch: (Set in 1923) 435' west from west line of North Street; 5' out from hydrant.																		
Fellsway West	Section Gate Removal: 7' north from north line of Jaques Street; 17' east from west line of Fellsway West.							6"	Coffin										
	Section Gate: On north line of Jaques Street; 17' east from west line of Fellsway West.					6"	Renss.												
Flint Street	Hydrant: 14' west from Cross Street.	6"	7							6"	Chap.								
	Gate on Hydrant Branch: 14' west from west line of Cross Street; 4' 4" out from hydrant.					6"	Renss.												
Florence Street	Main Gate Replacement: On south line of Pearl Street; 13' 4" east from west line of Florence Street.					8"	Renss.	8"	Peet										
Fountain Avenue	Hydrant: 16' 6" east from Cross Street.	6"	6							6"	Corey								
	Gate on Hydrant Branch: 16' 6" east from east line of Cross Street; 4' out from hydrant.					6"	Smith												
Fremont Street	Hydrant Replacement: 342' north from Main Street.									6"	Hol. G.	4"	B. Mch.						

Garrison Avenue	Gate on Hydrant Branch: 342' north from north line of Main Street; 4' out from hydrant.					6" Renss.			
	Hydrant Replacement: 236' south from Broadway.							6" Corey	6" Matt.
	Gate on Hydrant Branch: 236 south from south side of Broadway; 4' out from hydrant.					6" Renss.			
Gilman Street	Hydrant: 12' 6" west from Cross Street.	6"	7					6" Chap.	
	Gate on hydrant branch: 12' 6" west from west line of Cross Street; 4' out from hydrant.					6" Renss.			
Greenville Street	Main gate replacement: On north line of Monroe Street; 13' 4" west from east line of Greenville Street.					6" Renss.	6" Coffin		
Hawthorne Street	Main gate replacement: On west line of Willow Avenue; 11' north from south line of Hawthorne Street.					4" Renss.	4" B. Mch		
Highland Avenue	Hydrant replacement: 214' east from Spring Hill Terrace. (In front of State Armory.)	8"	10	6"	10			8" Corey	6" Matt.
	Gate on hydrant branch: 214' east from east line of Spring Hill Terrace; 4 ft. out from hydrant.					8" Chap.	6" Renss.		
Hillsdale Road	Street main: From connection with 8" main pipe in Hillsdale Road at section gate on north line of Sunset Road to connection with 8" main pipe in Upland Road.	8"	174						
Houghton Street	Main gate replacement: On west line of Prospect Street: 10' 6" south from north line of Houghton Street.					10" Renss.	10" B. Mch.		
Irvington Road	Street main: From connection with 12" main pipe in Mystic Valley Parkway easterly on line 13' 1" south from north line of Irvington Road to 8x8x8 tee at angle of Irvington Road at point 170' south from south line of Boston Avenue; thence northerly 6' 8" east from west line of Irvington Road to connection with 12" main in Boston Avenue.	8"	653						
	Gate: On east line of Mystic Valley Parkway; 13' 4" south from north line of Irvington Road.					8" Renss.			
	Hydrant: 104' east from Mystic Valley Parkway.	6"	6					6" Corey	
	Gate on hydrant branch: 104' east from east line of Mystic Valley Parkway; 4' out from hydrant.					6" Renss.			
	Hydrant: 40' west from angle of Irvington Road.	6"	6					6" Corey	
	Gate on hydrant branch: 40' west from west line of Irvington Road at angle; 4' out from hydrant.					6" Renss.			
Laurel Terrace	Street main: From connection with main pipe in Laurel Terrace at point 145' east from east line of Laurel Street to point 239' east from east line of Laurel Street.	6"	94						
Merriam Street	Hydrant replacement: 158' south from Washington Street.							6" Corey	6" Chap.

STREET	DESCRIPTION	PIPES				GATES.				HYDRANTS				BLOW-OFFS.				WATER POSTS.	
		LAID.		REMOVED		SET.		REMOVED		SET.		REMOVED		SET.		REM.		SET.	REM.
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind	Size.	No.	Size.	No.	No.	No.
	Gate on hydrant branch: 158' south from south line of Washington Street; 4' out from hydrant.					6"	Renss.												
Mystic Valley Parkway	Street main: From connection with 12" main pipe in Boston Avenue at point 5' north from south line of Boston Avenue, 6' west from east line of Mystic Valley Parkway to connection with 16" main pipe in Mystic Valley Parkway at point 61' 6" north from north line of Gordon Street.	12"	989																
	Gate: On south line of Boston Avenue; 6' west from east line of Mystic Valley Parkway.					12"	Renss.												
	Section gate: 7' west from east line of Mystic Valley Parkway; 42 ft. north from north line of the old Mystic Pumping Station. Also; on line with catch basin in gutter, opposite row of trees on State property.					12"	Renss.												
	Gate: 61' 6" north from north line of Gordon Street; 4' west from east line of Mystic Valley Parkway. (In brick chamber).					12"	Smith												
	Hydrant: 94' south from Irvington Road.	6"	3							6"	Chap.								
	Gate on hydrant branch: 94' south from south line of Irvington Road, in sidewalk; 2' 6" back from hydrant.					6"	Renss.												
School Street	Hydrant replacement: 6' south from Montrose Street.									6"	Corey	6"	Walker						
Stone Avenue	Hydrant removal: 275' south from Columbus Avenue.							6"	Renss.			6"	Corey						
	Hydrant: 281' south from Columbus Avenue.	6"	5							6"	Corey								
	Gate on hydrant branch: 6' north from hydrant and 9' west from east line of Stone Avenue; or 275' south from south line of Columbus Avenue and 9' west from east line of Stone Avenue.					6"	Renss.												
	Hydrant replacement: 120' north from Union Square.									6"	Corey	6"	Chap.						
	Gate on hydrant branch: 120' north from north line of Union Square; 4' out from hydrant.					6"	Renss.												

Summer Street	Gate on hydrant branch: 215' east from east line of Harvard Street; 4' out from hydrant.			6" Renss.			
Sunset Road	Section gate: 380' west from west line of Curtis Street; 13' 4" north from south line of Sunset Road. (On west line of house No. 34.)			6" Renss.			
Talbot Avenue	Street main: From connection with 12" main pipe in College Avenue to connection with 12" main pipe in Talbot Avenue at point 265' east from east line of Latin Way.	12"	688				
	Gate: On west line of College Avenue; 16' 8" south from north line of Talbot Avenue.			12" Renss.			
	Section gate: 484' west from west line of College Avenue; 16' 8" south from north line of Talbot Avenue.			12" Renss.			
	Hydrant: 5' west from College Avenue.	6"	8			6" Corey	
	Gate on hydrant branch: 5' west from west line of College Avenue; 4' out from hydrant.			6" Renss.			
	Hydrant: 488' west from College Avenue.	6"	9			6" Corey	
	Gate on hydrant branch: 488' west from west line of College Avenue; 5' 6" out from hydrant.			6" Renss.			
Tremont Street	Hydrant replacement: 9' south from Webster Avenue.					6" Matt.	6" Matt.
	Gate on hydrant branch: 9' south from south line of Webster Avenue; 3' out from hydrant.			6" Renss.			
	Hydrant replacement: 9' south from Webster Avenue. (Second replacement)					6" Corey	6" Matt.
Upland Road	Street main: From connection with 8" main pipe in Upland Road at point 390' 6" west from west line of Curtis Street to connection with 8" main pipe in Hillsdale Rd.	8"	278				
	Gate: On east line of Hillsdale Road; 13' 4" north from south line of Upland Rd.			8" Renss.			
	Hydrant: 85' east from Hillsdale Road.	6"	7			6" Corey	
	Gate on hydrant branch: 85' east from east line of Hillsdale Road; 4" out from hydrant.			6" Renss.			
	Hydrant: 309' 6" west from Curtis Street.	6"	7			6" Corey	
	Gate on hydrant branch: 309' 6" west from west line of Curtis Street; 4' out from hydrant.			6" Renss.			
	Gate on hydrant branch: (Abandoned) 353' 6" west from Curtis Street; 9' 6" north from south line of Upland Road.				6" Renss.		
Vernon Street	Hydrant replacement: 48' west from Central Street.					6" Corey	6" Matt.
	Gate on hydrant branch: 48' west from west line of Central Street; 4' out from hydrant.			6" Renss.			
Washington Avenue	Street main replaced: From connection with 12" main pipe in Washington Street to 2" gate on						

STREET.	DESCRIPTION.	PIPE.				GATES.				HYDRANTS.				BLOW-OFFS.				WATER POSTS.	
		LAID.		REMOVED		SET.		REMOVED		SET.		REMOVED		SET.		REM.		SET.	REM.
		Size.	Feet.	Size.	Feet.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	Kind.	Size.	No.	Size.	No.	No.	No.
	north line of Washington Street; 6' west from east line of Washington Avenue.	2"	20	2"	20														
Washington Street	Gate on hydrant branch: West corner Mt. Vernon Street; 4' out from hydrant.					6"	Renss.												
	Gate on hydrant branch: 15' west from west line of Myrtle Street; 3' 6" out from hydrant.					6"	Renss.												
	Gate on hydrant branch: 18' east from east line of Franklin Avenue; 4' out from hydrant.					6"	Renss.												
Weston Avenue	Hydrant replacement: 197' south from Broadway.									6"	Corey.	6"	Matt.						
	Gate on hydrant branch: 197' south from south line of Broadway; 4' out from hydrant.					6"	Renss.												
Wheatland Street	Hydrant replacement: 77' south from Mystic Avenue.									6"	Corey	6"	Chap.						
	Gate on hydrant branch: 77' south from south line of Mystic Avenue; 2' 6" out from hydrant.					6"	Renss.												
Wilton Street	Hydrant replacement: 6' east from Nashua Street.									6"	Corey	6"	Hol. G.						
	Gate on hydrant branch: 6' east from east line of Nashua Street; 3' out from hydrant.					6"	Renss.												
Yorktown Street	Street main: From connection with 2" main pipe in Yorktown Street at point 71' north from north line of Malvern Avenue to point 94' north from north line of Malvern Avenue.	2"	23																
			4125		52		56		12		35		23		0		0	0	0

SUMMARY OF STATISTICS

FOR THE YEAR ENDING DECEMBER 31, 1924

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics

Population, census 1920, 93,033; present, estimated 100,000.

Date of construction: Commenced in 1868.

By whom owned: City of Somerville.

Source of supply: Metropolitan water system.

Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water

Census population, 1920, 93.033.

Population on lines of pipe, Dec. 31, 1924, 100,000.

Population supplied, Dec. 31, 1924, 100,000.

Total consumption for the year, 2,840,186,000 gallons.

Average daily consumption, 7,760,100 gallons.

Gallons per day to each inhabitant, 77.

Statistics Relating to Distributing System, 1924

MAINS

Kind of pipe, cast iron.

Sizes, from 4-inch and under to 20-inch.

Laid 4,125 feet; discontinued 52 feet; net extension, 4,073 feet.

Total now in use, 105.1 miles.

Number of hydrants added during year (public, 12; private, 0) 12.

Number of hydrants (public and private) now in use, 1,279.

Number of stop gates added during year, 44.

Number of stop gates now in use, 2,060.

Number of blow-offs, 190.

Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron.

Sizes, one-half to eight inches.

Extended 5,333 feet; discontinued, 573 feet.

Total now in use 92.8 miles.

Number of service taps added, 159; discontinued, 15; increase, 144.

Number now in use, 14,189.

Number of meters added, 1,092; meters and motor registers discontinued, 159; net increase, 933.

Number now in use, 13,012.

Percentage of services metered, 91.6.

Percentage of water receipts from metered service, 93.2.

Numbr of motors and elevator registers added, 0; removed, 0.

Number now in use, 3 (included in number of meters.)

REVENUE

From Water Rates:—		
Fixture rates . . .	18,801 68	
Meter rates . . .	264,323 84	
Total from consumers .		$283,125 52
From other sources:—		
Water service assessments		8,559 72
Labor and materials .		10,687 94
Total		$302,373 18

Disposition of balance: applied to municipal purposes
Cost of works to date $1,187,641 73
Bonded dept at date . . . . None

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, repairs and renewals)	$69,720 13	
Special:—		
Miscellaneous accounts .	11,582 56	
Total		$81,302 69
Water Works Buildings		2,983 36
Water Works Construction:—		
Mains	$19,036 67	
Services	7,336 44	
Meters	7,741 61	
Total construction		$34,114 72
Metropolitan water assessment . .		142,275 86
Balance		41,696 55
Total		$302,373 18

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Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1925

Somerville (Mass.) Water C.

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Fixture rates . . .	18,801 68	
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Mains	$19,036 67	
Services	7,336 44	
Meters	7,741 61	
Total construction		$34,114 72
Metropolitan water assessment . .		142,275 86
Balance		41,696 55
Total		$302,373 18

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TILDEN FOUNDATIONS

Annual Report
of the
Water Commissioner
of the
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Massachusetts
1925

Somerville (Mass.) Water C.

ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

Compliments of

FRANK E. MERRILL,

Water Commissioner.

SOMERVILLE PRINTING CO.
1926

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO, MASSACHUSETTS

Settled, when part of Charlestown, 1630
(Home of Colonial Governor John Winthrop)
Incorporated a town, 1842
Established a city, 1872

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet
Highest building elevation in the city 145 feet
Area of city, including land and water, about 4.22 square miles
Land, 2,461.50 acres; water and marsh, 238.50 acres
Population, 1920 census, 93,033
Present population, estimated, 100,000
Entire population on line of pipe and supplied with water

Water works owned by City of Somerville
Construction commenced in 1868
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds
High service 45 to 100 pounds

Mayor

HON. JOHN M. WEBSTER

Water Commissioner

FRANK E. MERRILL

Office of the Water Department

Room 10, City Hall

Department Buildings and Yard

Cedar street, near Broadway

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS:

1868-1871

SOMERVILLE MYSTIC WATER COMMITTEE (5)

Acts 1868; Chap. 202

1872 — 1890

SOMERVILLE MYSTIC WATER BOARD (5)

Acts 1871; Chap. 182

1891 — 1897

SOMERVILLE MYSTIC WATER BOARD (3)

Acts 1890; Chap. 218

1898 — 1899

BOARD OF WATER COMMISSIONERS (3)

Acts 1898; Chap. 33

1900 —

WATER COMMISSIONER (1)

Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER

OFFICE OF THE WATER COMMISSIONER,
January, 1926.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1925, this being the fifty-first annual report of the water department and my twenty-fifth as water commissioner:

Revenue and Expidentures

Water bills have been issued as follows:—

"Annual" water charges, amounting to			$7.244 50
"Additional" water charges, amounting to			1,741 81
"Metered" water charges, amounting to			279,380 71
			$288,367 02
Adjustments			1,165 21
Income from sale of water			$287,201 81
Receipts; water service assessments		$12,417 97	
Receipts; labor and materials sold:—			
Misc. accounts charged	8,185 46		
Adjustments	843 66	7,341 80	
			19,759 77
Total income of water works			$306,961 58

This amount was used as follows:—

For water works purposes:—

Under Control of the Water Commissioner

Water Works Maintenance		$69,943 10	
Water Works Extension		53,408 69	
Miscellaneous accounts:			
Maintenance	$7,341 80		
Extension	47 39	7,389 19	
			$130,740 98

Not Under Control of the Water Commissioner

Metropolitan water works assessment	$138,498 07	
Maintenance water works buildings	1,828 91	
		$140,326 98

For other municipal purposes:—

Not Under Control of the Water Commissioner

Surplus	$35,893 62
Total	$306.961 58

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements

WATER MAINTENANCE ACCOUNT

Appropriations made by Board of Aldermen		$81,000 00
Department accounts; receipts		1,179 55
Water works extension account; receipts		34,936 72
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$69,943 10	
Amount expended for materials used in extension of the water works	34,936 72	
Miscellaneous accounts	7,341 80	
Labor and materials furnished municipal departments	1,179 55	
Extension Account; amount refunded	47 39	
Transferred to other accounts by Board of Aldermen	3,635 00	
Balance	32 71	
	$117,116 27	$117,116 27

WATER WORKS EXTENSION ACCOUNT

Appropriations made by Board of Aldermen		$54,000 00
Water Maintenance account: refunds		348 45
Amounts paid Water Maintenance Account	47 39	
Service for Public Building	301 06	
Amount expended for labor and materials used in extension of the water works	53,408 69	
Balance	591 31	
	$54,348 45	$54,348 45

Cost of Water Works

The total cost of water works on December 31, 1924, as represented by the expenditures from appropriations for water works extension was	$1,187,641 73
Expended during the year 1925, on extension account	$ 53,408 69
Total expenditures, December 31, 1925	$1,241,050 42

Water Works Income from 1898 and its Distribution

The water income and its distribution from 1898 to 1925, inclusive, is shown in the following table:—

Total water income		$6,869,460 83
Distribution:—		

Water Works Account

Water works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$1,895,290 80	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments	2,825,935 66	
Maintenance Water Works buildings	16,584 63	
		$5,098,386 09

Other Municipal Accounts

Various municipal departments through specific appropriations and general revenue account	$1,771,074 74
	$6,869,460 83

Water Distribution System—Construction

STREET MAINS

Approximate number of feet of street mains in the city, January 1, 1925. (including hydrant branches and blow-offs)		555,296
Feet of street mains laid in 1925	8,338	
Feet of hydrant branches laid in 1925	190	
Feet of blow-off branches laid in 1925	26	
Total feet of pipe laid	8,554	
Feet of pipe removed or replaced	334	
Net increase in feet of pipe		8,220
Total approximate feet of pipe in the city		563,516
Total pipe mileage, approximately		106.72

The sizes and lengths of pipe laid and discontinued are as follows:

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
¾"	0	0	6"	1,215	0
1"	108	51	8"	596	0
1½"	0	44	10"	2,994	24
2"	149	215	12"	2,926	0
4"	113	0	16"	66	0
			20"	387	0

The pipes constructed and replaced during the year are as follows:—

	Size	Feet Laid	Feet Discontinued	Size Discontinued
Bailey Road	10"	112		
Century Street	8"	326		
Century Street	4"	67		
Chapel Court	2"	149		
Chapel Court	1"	116		
Crown Street	6"	241		
Edgar Court	6"	165		
Edgar Terrace	6"	165		
Fenwick Street	6"	161	166	2"
Gov. Winthrop Rd.	14"	756		
Middlesex Avenue	24"	357		
Middlesex Avenue	16"	25		
Middlesex Fells Parkway	12"	769		
Mystic Avenue	12"	319		
Powder House Blvd.	12"	966	24	10"
Powder House Blvd.	16"	12	49	2"
Powder House Blvd.			44	1½"
Powder House Blvd.			51	1"
Puritan Road	16"	716		
Putnam Road	16"	617		
Silvey Place	8"	277		
Ten Hills Road	12"	872		
Ten Hills Farm Dev.	16"	48		
Washington Terrace	6"	212		
Weston Avenue	6"	84		
Hydrant branches and blow-offs		216		
		8,554	334	

Hydrants, Gates, etc.

Number of fire hydrants in city January 1, 1925		1,213	
Number set during year	38		
Number removed during the year	20		
Net increase in number of hydrants		18	
Total number of public fire hydrants			1,231
Number of private fire hydrants, January 1, 1925		66	
Number added		0	
Total number of private fire hydrants receiving their supply from the city mains		66	

Number of gates in city, January 1, 1925			2,060
Number set during the year for streets	24		
Number of section gates set	10		
Number set on hydrant branches	48		
Number set on blow-off branches	3		
Number set on check-valve connections	1		
		86	
Number of street gates removed	1		
Number of section gates removed	0		
Number of waterpost gates removed	3		
Number of street sprinkler gates removed	2		
		6	
Net increase in number of gates			80
Total number of gates in city			2,140
Number of check-vales in city January 1, 1925		8	
Number added during the year		1	
Total number of check-valves			9
Number of blow-offs in city January 1, 1925		190	
Number added during the year		3	
Total number of blow-offs			193
Number of waterposts in city January 1, 1925		65	
Number removed during the year		3	
Total number of waterposts			62
Number of drinking fountains in city			8
Number of car-sprinkler connections January 1		17	
Number removed during year		2	
Number now in city			15

Water Service Connections

Interpreting "Water Services" to mean service connections in use on live supplies it appears from a study of old records, elimination of old service connections through combination with other supplies, abandonment of old service connections, etc., that the number of services actually in use in the city on January 1, 1925 was		13,516
The number of new service connections brought into use during the year was	189	
The number of old service connections restored to use	75	
	264	
The number of service connections shut off during the year for permanent or temporary non-use of water was	166	

Increase in number of services in actual use	98
The total number of services in use on December 31, 1925, was approximately	13,614
These services, under state law, are all required to be metered.	
In addition to the above there are fire supplies for sprinkler systems, which are not at present required to be metered, to the number of	62
The number of new service connections installed during the year was 251 but not all of these are yet in use, or "alive."	
The number of feet of pipe laid in making these connections was 9,062.	

Size, number and length of services installed in 1925:—

¾"—220—7837' 1"—13—370' 1½"—4—66'
2 "— 5— 215' 4"— 2—293' 6 "—7—281'

Number of fire supplies installed during 1925 (Included in above)	7

Location of Fire Supplies	No.	Size
Linwood St., No. 161; Ernest P. Robitaille, Public Garage	1	6"
Beacon St., No. 266; Albert S. Walsh, Public Garage	1	6"
Meacham Road; Isadore Meyer, Public Garage	1	6"
Summer St., No. 364; Francis R. Henderson, Garage and Stores	1	6"
Highland Ave., No. 186; Little Sisters of Poor, Institution	1	6"
Broadway cor. Glen St., M. Peraner & Sons, Garage and Stores	1	6"
Highland Ave., No. 391; M. Peraner & Sons, Garage and Stores	1	6"

Water Meters

Number of water meters in city, January 1, 1925		13,012
Number installed during the year, new	285	
Number reset	186	
	471	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	277	
Number of motor registers (included in above)		2
Net increase in number of operating meters		194
Total number of meters in service		13,206
Per cent. of services metered		97.7

Operating Meters December 31, 1925

Size	⅝"	¾"	1"	1½"	2"	3"	4"	6"	Total
No.	12742	283	107	20	30	13	8	1	13,204
Motor and elevator registers									2
									13,206

The meters installed in 1925 were classed as follows:—

Applications of property owners	1
New services	189
General installation	95
Reset	186
Total	471

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	122
Services permanently discontinued (1 motor register)	44
Replaced by other meters	111
Total	277

Meters installed yearly on old and new services under the State Compulsory Meterage law, which requires complete meterage of city by the year 1928:—

	Average installation required on old services	Meters set on old services	Set in excess of requirements	Total excess	Meters set on new services
1908	411	755	344	344	147
1909	411	637	226	570	201
1910	411	501	90	660	169
1911	411	528	117	777	200
1912	411	423	12	789	236
1913	411	432	21	810	255
1914	411	422	11	821	231
1915	411	439	28	849	217
1916	411	434	23	872	203
1917	411	163	248†	624	154
1918	411	82	329†	295	39
1919	411	166	245†	50	23
1920	411	115	296†	246†	45
1921	411	663	252	6	60
1922	411	67	344†	338†	181
1923	411	430	19	319†	244
1924	411	811	400	81	163
1925	411	96	315†	234†	189

† Deficiency.

NOTE:—Meter connections were installed in 1925 for the years full quota but setting the meters in place lapped over the end of the year and the figures will appear in the report for 1926.

The following table shows the progress of meter installation in Somerville by years and the results therefrom in water consumption: —

Year	Population	Number of Services	Number of Meters	Per Cent Metered		Per Capita Consumption
1897	58,000	9,601	....	....	(Est.)	88
1898	59,000	9,806	143	1.5	"	88
1899	61,000	10,052	226	2.25	"	88
1900	62,000	10,291	202	2	"	88
1901	64,000	10,520	224	2	"	88
1902	66,000	10,710	269	2.5	"	88
1903	68,000	10,854	647	6	"	88
1904	69,000	11,059	1,272	11.5	Met.	89
1905	70,000	11,279	2,092	18.5	"	89
1906	71,000	11,489	2,829	24.5	"	89
1907	72,000	11,662	3,455	29.5	"	90
1908	74,000	11,817	4,333	36.5	"	89
1909	76,000	12,018	5,155	43	"	84
1910	78,000	12,149	5,817	48	"	80
1911	79,000	12,357	6,533	53	"	74
1912	80,000	12,596	7,171	57	"	79
1913	82,000	12,827	7,856	61	"	72
1914	85,000	13,034	8,499	65	"	73
1915	87,000	13,233	9,155	69	"	67
1916	90,000	13,420	9,763	72.75	"	69
1917	91,000	13,509	10,028	74.23	"	73
1918	91,000	13,514	10,116	74.86	"	80
1919	92,000	13,544	10,322	76.21	"	69
1920	93,033	13,554	10,472	77.26	"	77
1921	95,000	13,631	11,190	82.11	"	73
1922	96,000	13,844	11,447	82.68	"	76
1923	98,000	14,045	12,079	86.0	"	81
1924	100,000	14,189	13,012	90.6	"	77
1925	100,000	13,614*	13,206	97.7	"	80

*Resurvey

Summary of Pipes and Fixtures of the Water System
December 31, 1925

Feet of main pipe (approximately)	563,502
Services in use (approximately)	13,614
Fire supplies (sprinkler systems)	62
Public fire hydrants	1,231
Private fire hydrants	66
Gates	2,142
Check Valves	9
Meters	13,206
Motor registers	2
Waterposts	62
Car-sprinkler connections	15
Blow-offs	185
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION

The assessment paid to the Commonwealth by this city as its proportionate part of the cost and operation of the Metropolitan Water Works for the year 1925 was as follows:—

Sinking Fund	9,494 07
Maintenance	39,301 10
Interest	80,534 66
Maturing Bonds	4,686 40
Brookline Credit	4,481 84
Total payment for 1925	138,498 07

The amount paid by this city since the beginning in 1898 is as follows:—

Sinking Fund	431,646 32
Maintenance	614,168 24
Interest	1,682,650 71
Maturing Bonds	29,073 54
Miscellaneous	68,396 85
Total payments to date	2,825,935 66

There has been credited to the city by the Commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district and water furnished to water companies, the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1925:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	8,163,200	83	July	8,423,700	85
February	7,765,900	79	August	8,295.800	84
March	7,449,300	75	September	8,282,600	83
April	7,375,700	75	October	7,976,700	80
May	7,590,800	77	November	7,653,800	77
June	8,492,700	86	December	7,977,000	80

The consumption for the year was:—

Low-service	2,265,204,000 gallons
High-service system	638,555,000 gallons
Total consumption	2,903,759,000 gallons
Average daily consumption	7,955,500 gallons
Average daily consumption, per capita, for Somerville	80 gallons
Average daily consumption per capita, for Metropolitan district	99 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1925, as registered by the Metropolitan meters.

City or town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	62	58	55	58	68	78	70	70	69	63	56	52	63
Belmont	61	61	61	64	64	82	78	82	80	68	63	61	69
Boston	124	118	112	111	109	118	116	115	116	115	112	117	115
Chelsea	93	87	77	74	73	76	76	76	76	74	73	75	77
Everett	127	134	119	128	126	132	130	126	127	118	118	122	126
Lexington	59	61	57	56	61	73	71	71	69	62	63	58	63
Malden	63	59	58	57	53	56	55	57	61	57	56	56	57
Medford	51	51	51	48	49	55	51	51	52	51	56	65	53
Melrose	58	59	55	57	57	66	68	68	67	67	64	61	62
Milton	47	45	46	47	49	52	46	46	47	48	46	45	47
Nahant	53	51	50	65	97	184	219	215	161	80	58	58	108
Quincy	71	71	70	70	69	81	81	80	78	73	77	74	75
Revere	72	68	65	66	69	78	80	83	77	69	64	68	71
Somerville	83	79	75	75	77	86	85	84	83	80	77	80	80
Stoneham	66	64	58	56	60	66	64	66	68	64	63	65	63
Swampscott	59	58	58	64	76	108	115	113	96	69	83	109	84
Watertown	79	76	70	68	71	81	80	81	78	74	66	65	74
Winthrop	57	56	55	55	57	71	80	86	73	59	57	59	64
Met. Dist.	104	100	95	94	93	102	101	100	100	98	96	99	99

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1925:

	Total Per Day	Per Capita Per Day	Services Metered*
Milton	604,000	47	100
Medford	2,507,600	53	100
Malden	2,968,400	57	99.47
Melrose	1,253,800	62	100
Arlington	1,576,400	63	100
Lexington	492,900	63	100
Stoneham	574,000	63	100
Winthrop	1,030,000	64	100
Belmont	1,047,600	69	100
Revere	2,377,900	71	87.47
Watertown	1,887,500	74	100
Quincy	4,478,200	75	91.12
Chelsea	3,660,400	77	99.73
Somerville	7,955,500	80	97.7
Swampscott	753,900	84	100
Nahant	176,000	108	93.92
Boston	89,724,700	115	94.11
Everett	5,281,000	126	89.38
Total District	128,349,800	99	95.08

*Metropolitan District Commission Report for 1924.

Operation — Maintenance — Construction

The constantly increasing routine work of the department has kept our maintenance and operating forces busily engaged.

Much building activity has taken place in the easterly part of the city through the acquisition of a large tract of land on Middlesex avenue by the Ford Motor Company for

an assembling plant, and the development of the so-called Ten Hills Farm, a tract covering many acres which once contained the country residence of Colonial Governor John Winthrop. This "Farm" has now been laid out with streets and about 300 house lots upon which many residences have been erected during the year. Several thousand feet of street mains with service pipes, fire hydrants, controlling valves and blow-offs have been installed to meet present requirements of a water supply in these developments.

Tracts of smaller area in other parts of the city have been developed residentially and all have received needful supplies of water.

Important work in connecting dead ends of mains to improve the water circulation in the distribution system has been accomplished in Mystic Avenue, Crown Street and Powder House Boulevard. In the latter street an additional check-vaive was installed to automatically feed the high-service district from the low-service system in case of need through failure of the high-pressure mains to properly function.

251 new service pipes have been laid, showing an increase of 96 over the previous year. Meters or meter connections have been installed to meet all requirements of consumers and of the State laws.

A summary of the streets in which water pipes were laid appears earlier in this report; the lengthy detailed items of the work done which have in previous years appeared in these pages are now kept on reference file in the general office of the water department.

As much as possible of the construction work of the year has been done by contract under supervision of the water commissioner.

Northern Traffic Artery

Much study has been given the proposed new traffic road which is to be built through Somerville by the Commonwealth in relation to its effect upon the water pipes now in use. Some changes will undoubtedly need to be made and preparations for the same are under way. Service connections have already been cut off from more than forty dwelling houses that have been vacated and other work has been accomplished.

Water Consumption

The water consumption for the year has risen three points to an average of 80 gallons per capita daily and the receipts from sales of water have correspondingly increased.

Water Rate Collections

The burden of collecting the water rates falls upon the water department. How well this is accomplished is shown by the following results, which gives the water commissioner justifiable pride:—

The table gives the number and amount of metered water bills rendered in each month of the year 1925. Each bill covers a period of three months use of water.

Section and Qr.	Date of Bills	Number of Bills	Amount to be Collected
1-4	January 1	3826	$32,290 54
2-1	February 1	4960	19,578 13
3-1	March 1	4315	15,644 66
1-1	April 1	3830	36,006 67
2-2	May 1	4968	19,616 88
3-2	June 1	4320	14,658 66
1-2	July 1	3835	32,494 03
2-3	August 1	4970	20,610 66
3 3	September 1	4326	15,889 29
1-3	October 1	3844	35,933 04
2-4	November 1	5022	20,658 40
3-4	December 1	4338	14,595 16

At the time of going to press with this report these bills have all been paid, making the record of collections 100 per cent.

The above record is made possible largely through our method of closely following up delinquencies and the judicious use of the gate wrench.

It has been found necessary to apply the provisions of the recently enacted Water Rate Lien Law in but one instance and this bill was then promtly paid.

Financial

All bills against the department for the year have been paid, so far as known, and the books show a surplus of receipts from departmental activities amounting to $35,893.62.

Acknowledgment

The water commissioner appreciates the constructive help of mayor, aldermen, business associates, employees and citizens who have cooperated with him in his work of carrying on this large and important public service of our city.

Respectfully submitted,

FRANK E. MERRILL,

Water Commissioner.

SUMMARY OF STATISTICS

FOR THE YEAR ENDING DECEMBER 31, 1925

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics

Population, census 1920, 93,033; present, estimated 100,000.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1925, 100,000.
Population supplied, Dec. 31, 1925, 100,000.
Total consumption for the year, 2,903,759,000 gallons.
Average daily consumption, 7,955,500 gallons.
Gallons per day to each inhabitant, 80.

Statistics Relating to Distributing System, 1925

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 8,554 feet; discontinued 334 feet; net extension, 8,220 feet.
Total now in use, 106.7 miles.
Number of hydrants added during year (public, 18, private, 0) 18.
Number of hydrants (public and private) now in use, 1,297.
Number of stop gates added during year, 80.
Number of stop gates now in use, 2,140.
Number of blow-offs, 193.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron.
Sizes, one-half to eight inches.
Laid 9,062 feet.
Number of service connections made, 251.
Services in use, approximately, 13,614.
Number of fire supplies (sprinkler systems), 62.
Number of meters added, 471; meters and motor registers discontinued, 277; net increase, 194.
Number now in use, 13,206.
Percentage of services metered, 97.7.
Percentage of water receipts from metered service, 97.
Number of motors and elevator registers added, 0; removed, 1.
Number now in use, 2 (included in number of meters.)

REVENUE

From Water Rates:—		
Fixture rates	8,375 54	
Meter rates	278,826 27	
Total from consumers		$287,201 81
From other sources:—		
Water service assessments		12,417 97
Labor and materials		7,341 80
Total		$306,961 58

Disposition of balance: applied to municipal purposes

Cost of works to date $1,241,050 42

Bonded debt at date .... None

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, repairs and renewals)	$69,943 10	
Special:—		
Miscellaneous accounts	7,389 19	
Total		$77,332 29
Water Works Buildings		1,828 91
Water works Construction:—		
Mains	$39,082 22	
Services	11,885 84	
Meters	2,440 63	
Total construction		$53,408 69
Metropolitan water assessment		138,498 07
Balance		35,893 62
Total		$306,961 58

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Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1926

ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

Compliments of

FRANK E. MERRILL,

Water Commissioner.

SOMERVILLE PRINTING CO.
1927

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS

Settled, when part of Charlestown, 1630
(Home of Colonial Governor John Winthrop)
Incorporated a town, 1842
Established a city, 1872

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet
Highest building elevation in the city 145 feet
Area of city, including land and water, about 4.22 square miles
Land, 2,461.50 acres; water and marsh 238.50 acres
Population, 1920 census, 93,033
Present Population, estimated 101,000
Entire population on line of pipe and supplied with water

Water works owned by City of Somerville
Construction commenced in 1868
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds
High service 45 to 100 pounds

Mayor
Hon. Leon M. Conwell

Water Commissioner
Frank E. Merrill

Office of the Water Department
City Hall, Highland Ave., corner School St.

Department Buildings and Yard
Cedar street, near Broadway

ADMINISTRATION OF WATER WORKS
VESTED AS FOLLOWS:

1868-1871

SOMERVILLE MYSTIC WATER COMMITTEE (5)

Acts 1868; Chap. 202

1872 — 1890

SOMERVILLE MYSTIC WATER BOARD (5)

Acts 1871; Chap. 182

1891 — 1897

SOMERVILLE MYSTIC WATER BOARD (3)

Acts 1890; Chap. 218

1898 — 1899

BOARD OF WATER COMMISSIONERS (3)

Acts 1898; Chap. 33

1900 —

WATER COMMISSIONER (1)

Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER

OFFICE OF THE WATER COMMISSIONER,
January, 1927.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1926, this being the fifty-second annual report of the water department and my twenty-sixth as water commissioner:

Revenue and Expenditures

Water bills have been issued as follows:—

"Annual" water charges, amounting to			$2,291 50
"Additional" water charges, amounting to			3,288 46
"Metered" water charges, amounting to			293,299 18
			$298,879 14
Adjustments			893 20
Income from sale of water			$297,985 94
Receipts; water service assessments		$13,709 58	
Receipts labor and materials sold:—			
Misc. accounts charged	10,680 19		
Adjustments	456 53	10,223 66	
			23,933 24
Total income of water works			$321,919 18

This amount was used as follows:—

For water works purposes:—

Under Control of the Water Commissioner

Water Works Maintenance	$82,611 38	
Water Works Extension	86,333 72	
Miscellaneous accounts:		
Maintenance	$10,223 66	
		$179,168 76

Not Under Control of the Water Commissioner

Metropolitan water works assessment	$162,676 64	
Maintenance water works buildings	2,584 10	
		$165,260 74
Deficit (Of this amount the sum of $14,480.37 is owed to the city by the State for work done by this department in the Northern Traffic Artery, for which bills have been rendered)		22,510 32
Total		$321,919 18

In addition to the appropriations from wáter income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements

WATER MAINTENANCE ACCOUNT

Appropriations made by Board of Aldermen		$113,200 00
Department accounts; receipts		917 52
Water works extension account; receipts		54,648 43
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$82,611 38	
Amount expended for materials used in extension of the water works	54,648 43	
Miscellaneous accounts	10,223 66	
Labor and materials furnished municipal departments	917 52	
Transferred to other accounts by Board of Aldermen	15,000 00	
Balance	5,364 96	
	$168,765 95	$168,765 95

WATER WORKS EXTENSION ACCOUNT

Appropriations made by Board of Aldermen		$86,430 00
Amount expended for labor and materials used in extension of the water works	86,333 72	
Balance	96 28	
	$86,430 00	$86,430 00

Cost of Water Works

The total cost of water works on December 31, 1925, as represented by the expenditures from appropriations for water works extension was	$1,241,050 42
Expended during the year 1926, on extension account	86,333 72
Total expenditures, December 31, 1926	$1,327,384 14

Water Works Income from 1898 and its Distribution

The water income and its distribution from 1898 to 1926, inclusive, is shown in the following table:—

Total water income		$7,191,380 01

Distribution:—

Water Works Account

Water works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$2,074,459 56	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments	2,988,612 30	
Maintenance Water Works buildings	19,168 73	
		$5,442,815 59

Other Municipal Accounts

Various municipal departments through specific appropriations and general revenue account	$1,748,564 42
	$7,191,380 01

Water Distribution System—Construction

STREET MAINS

Approximate number of feet of street mains in the city, January 1, 1926, (including hydrant branches and blow-offs)		563,516
Feet of street mains laid in 1926	12,337	
Feet of hydrant branches laid in 1926	289	
Feet of blow-off branches laid in 1926	64	
Total feet of pipe laid	12,690	
Feet of pipe removed or replaced	1,674	
Net increase in feet of pipe		11,016
Total approximate feet of pipe in the city		574,532
Total pipe mileage, approximately		108.81

The sizes and lengths laid and discontinued are as follows:

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
2"	12	120	10"	3,664	0
4"	374	204	12"	2,202	0
6"	720	592	16"	3,881	30
8"	857	728	20"	980	0

The pipes constructed and replaced during the year are as follows:—

	Size	Feet Laid	Feet Discontinued	Size
Aldrich Street	10"	156	156	4"
Bailey Road	10"	866		
Blakeley Avenue	10"	180	22	6"
	12"	3		
Broadway	8"	99		
Clyde Street	8"	51	48	4"
Crest Hill Road	8"	278		
Cross St. East	12"	501		
Delaware Street	8"	116	116	6"
Edmands Street	6"	216		
Edmonton Avenue	12"	5	22	8"
Everett Avenue	10"	101	101	6"
Flint Street	10"	161	150	6"
Garfield Avenue	12"	47		
	6"	5		
Gov. Winthrop Road	10"	828		
Greene Street	4"	75		
Gussie Terrace	4"	293		
Kensington Avenue	6"	152		
	12"	28		
Linden Place	2"	12	12	2"
Maple Street	12"	18	47	6"
Medford Street (N. A.)	16"	1,053		
	12"	22		
Melville Road	8"	308		
Middlesex Avenue	20"	980		
	12"	10		
Middlesex Fells Parkway (Fellsway East) (N. A.)	16"	1,352	604	8"
Middlesex Fells Parkway (Near Middlesex Ave.)	12"	4		
Mystic Avenue	12"	42		
Otis Street	10"	102	102	8"
Poplar Street	12"	16	37	6"
Puritan Road	10"	683		
Putnam Road	10"	587		
Somerville Ave. (N. A.)	16"	619		
	12"	46		
Temple Road	12"	806		
Ten Hills Farm	16"	206		
Ten Hills Road	12"	654		
Warwick Place	8"	5		
Winthrop Avenue	16"	651	30	16"
		12,337	1,447	
Hydrant branches and blow-offs		353	119	
Waterpost service pipe removed			108	
		12,690	1,674	

N. A.=Northern Traffic Artery.

Hydrants, Gates, etc.

Number of fire hydrants in city January 1, 1926		1,231	
Number set during the year	46		
Number removed during the year	23		
Net increase in number of hydrants		23	
Total number of public fire hydrants			1,254
Number of private fire hydrants, January 1, 1926		66	
Number added:			
Tufts College Dormitory, off Professors Row	1		
Carlisle, Ayer Co.—Warehouse, off Clyde St.	1	2	
Total number of private fire hydrants receiving their supply from the city mains			68
Number of gates in city, January 1, 1926			2,140
Number set during the year for streets	41		
Number of section gates set	11		
Number set on hydrant branches	56		
Number set on blow-off branches	2		
		110	
Number of street gates removed	5		
Number of section gates removed	1		
Number of waterpost gates removed	1		
Number of hydrant branch gates removed	10		
		17	
Net increase in number of gates			93
Total number of gates in city			2,233
Number of check-valves in city January 1, 1926		9	
Number added during the year		0	
Total number of check-valves			9
Number of blow-offs in city January 1, 1926		193	
Number added during the year		2	
Total number of blow-offs			195
Number of waterposts in city January 1, 1926		62	
Number removed during the year		1	
Total number of waterposts			61
Number of drinking fountains in city Jan. 1, 1926		8	
Number removed during the year		1	
Number now in the city			7
Number of car-sprinkler connections January 1, 1926		15	
Number removed during year		0	
Number now in city			15

Water Service Connections

The number of services actually in use in the city on January 1, 1926 was		13,614
The number of new service connections brought into use during the year was	262	
The number of old service connections restored to use	103	
	365	
The number of service connections shut off during the year for permanent or temporary non-use of water was	247	
Increase in number of services in actual use		118
The total number of services in use on December 31, 1926, was approximately		13,732
These services, under state law, are all required to be metered.		
In addition to the above there are fire supplies for sprinkler systems, which are not at present required to be metered, to the number of		71

The number of new service connections installed during the year was 258 but not all of these are yet in use, or "alive."

The number of feet of pipe laid in making these connections was 8.071.

Size, number and length of services installed in 1926:—

¾"	230	6,699'
1 "	8	264'
1½"	1	60'
2 "	5	182½'
4 "	3	106'
6 "	9	657½'
8 "	1	24'
12 "	1	78'
	258	8,071'

Number of fire supplies installed during 1926 (Included in above) 9

Location of Fire Supplies	No.	Size
Highland Ave., No. 151-3; John E. Locatelli, Theatre	1	6"
Clyde St.; Carlisle-Ayer Co. Storage Warehouse	1	8"
Broadway, No. 341; Princeton Garage, Inc., Public Garage	1	6"
Merriam St. Boston El. Ry. Co. Bus Garage	1	6"
Somerville Ave., cor Merriam St.; Bos. El. Ry. Co., Bus Garage	1	6"

Davis Sq., cor Dover St.; Davis Sq. Realty Tr. Stores and Offices	1	6"
Middlesex Fells Parkway; Pilgrim Motor Co., Motor Sales	1	6"
Broadway, No. 303; Paul Vartigian, Theatre	1	6"
Bond Street; Winter Hill Realty Co., Public Garage	1	6"

Water Meters

Number of water meters in city, January 1, 1926		13,206
Number installed during the year, new	662	
Number reset	193	
	855	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	329	
Net increase in number of operating meters		526
Number of motor registers (included in above)	1	
Total number of meters in service		13,732
Per cent. of services metered		100

Operating Meters December 31, 1926

Size	⅝"	¾"	1"	1½"	2"	3"	4"	6"	Total
No.	13,245	294	110	22	35	16	7	2	13,731
Motor and elevator registers									1
									13,732

The meters installed in 1926 were classed as follows:—

New services	262
General installation	400
Reset	193
Total	855

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	138
Services permanently discontinued (1 motor register)	95
Replaced by other meters	96
Total	329

It was found necessary to install but 400 meters to complete the full meterage of the city in 1926: this number was accordingly set and the work was thereby completed a year ahead of date required by law.

The following table shows the progress of meter installation in Somerville by years and the results therefrom in water consumption :—

Year	Population	Number of Services	Number of Meters	Per Cent Metered		Per Capita Consumption
1897	58,000	9,601	....	....	(Est.)	88
1898	59,000	9,806	143	1.5	"	88
1899	61,000	10,052	226	2.25	"	88
1900	62,000	10,291	202	2	"	88
1901	64,000	10,520	224	2	"	88
1902	66,000	10,710	269	2.5	"	88
1903	68,000	10,854	647	6	"	88
1904	69,000	11,059	1,272	11.5	Met.	89
1905	70,000	11,279	2,092	18.5	"	89
1906	71,000	11,489	2,829	24.5	"	89
1907	72,000	11,662	3,455	29.5	"	90
1908	74,000	11,817	4,333	36.5	"	89
1909	76,000	12,018	5,155	43	"	84
1910	78,000	12,149	5,817	48	"	80
1911	79,000	12,357	6,533	53	"	74
1912	80,000	12,596	7,171	57	"	79
1913	82,000	12,827	7,856	61	"	72
1914	85,000	13,034	8,499	65	"	73
1915	87,000	13,233	9,155	69	"	67
1916	90,000	13,420	9,763	72.75	"	69
1917	91,000	13,509	10,028	74.23	"	73
1918	91,000	13,514	10,116	74.86	"	80
1919	92,000	13,544	10,322	76.21	"	69
1920	93,033	13,554	10,472	77.26	"	77
1921	95,000	13,631	11,190	82.11	"	73
1922	96,000	13,844	11,447	82.68	"	76
1923	98,000	14,045	12,079	86.0	"	81
1924	100.000	14,189	13,012	90.6	"	77
1925	100,000	13,614	13,206	97.7	"	80
1926	101,000	13,732	13,732	100.	"	78

Summary of Pipes and Fixtures of the Water System

December 31, 1926

Feet of main pipe (approximately)	574,532
Services in use (approximately)	13,732
Fire supplies (sprinkler systems)	71
Public fire hydrants	1,254
Private fire hydrants	68
Gates	2,233
Check Valves	9
Meters	13,732
Motor registers	1
Waterposts	61
Car-sprinkler connections	15
Blow-offs	195
Drinking fountains and troughs	7

WATER ASSESSMENTS AND CONSUMPTION

The assessment paid to the Commonwealth by this city as its proportionate part of the cost and operation of the Metropolitan Water Works for the year 1926 was as follows:—

Sinking Fund	9,223 66
Maintenance	40,645 36
Interest	82,043 95
Maturing Bonds	6,072 00
Brookline Credit	4,366 75
Improvements, etc.	15,840 00
Investigation of Water Supply Sources	4,484 92
Total payment for 1926	162,676 64

The amount paid by this city since the beginning in 1898 is as follows:—

Sinking Fund	440,869 98
Maintenance	654,813 60
Interest	1,764,694 36
Maturing Bonds	35,145 54
Miscellaneous	93,088 52
Total payments to date	2,988,612 30

There has been credited to the city by the Commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district and water furnished to water companies, the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1926:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	8,216,200	82	July	8,060,500	80
February	8,063,000	81	August	7,396,800	74
March	7,460,800	75	September	7,773,500	77
April	7,412,200	74	October	7,711,000	77
May	7,324,800	73	November	7,881,600	78
June	8,117,600	81	December	8,100,600	80

The consumption for the year was:—

Low-service	2,220,094,000 gallons
High-service system	623,613,000 gallons
Total consumption	2,843,707,000 gallons
Average daily consumption	7,791,000 gallons
Average daily consumption, per capita, for Somerville	78 gallons
Average daily consumption per capita, for Metropolitan district	98 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1926, as registered by the Metropolitan meters.

City or Town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	54	53	51	52	57	69	75	53	66	56	55	51	58
Belmont	63	66	68	69	76	86	79	56	66	59	53	52	66
Boston	122	[illegible]	115	110	111	112	115	115	116	115	114	122	116
Chelsea	76	74	75	70	67	70	74	73	73	71	72	76	72
Everett	137	123	118	113	116	118	118	116	127	128	129	133	123
Lexington	56	54	55	55	62	73	89	69	73	65	63	57	64
Malden	55	55	57	56	57	60	65	62	64	63	61	64	60
Medford	53	47	52	48	49	51	54	49	53	52	52	53	51
Melrose	60	61	62	66	65	71	76	65	72	67	67	71	67
Milton	47	47	48	49	56	64	59	47	53	54	53	50	52
Nahant	58	55	56	54	95	163	220	188	155	96	64	69	107
Quincy	73	76	76	73	77	78	81	77	78	76	74	75	76
Revere	64	64	62	59	65	70	78	75	72	63	59	64	66
Somerville	82	81	75	74	73	81	80	74	77	77	78	80	78
Stoneham	64	65	65	63	64	63	61	55	58	55	54	56	60
Swampscott	64	59	70	77	92	96	112	95	91	72	61	59	78
Watertown	66	68	67	66	71	82	95	85	84	83	84	88	78
Winthrop	57	58	60	55	59	68	82	79	70	62	62	61	64
Met. Dist	102	101	97	93	94	97	101	98	99	98	97	102	98

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1926:

	Total Per Day	Per Capita Per Day	Services Metered*
Medford	2,522,400	51	100
Milton	701,600	52	100
Arlington	1,529,200	58	100
Malden	3,139,800	60	99.44
Stoneham	560,000	60	100
Lexington	516,900	64	99.45
Winthrop	1,067,000	64	100
Belmont	1,056,900	66	100
Revere	2,263,800	66	86.02
Melrose	1,379,600	67	100
Chelsea	3,474,400	72	99.84
Quincy	4,757,000	76	92.95
Somerville	7,791,000	78	100.
Swampscott	720,800	78	100
Watertown	2,059,300	78	100
Nahant	178,200	107	78.23
Boston	91,275,700	116	96.11
Everett	5,215,900	123	91.14
Total District	130,209,500	98	96.71

*Metropolitan District Commission Report for 1925.

Operation — Maintenance — Construction

A study of the preceding pages discloses much activity in the water distribution system of the department, especially in the construction of new and replacement of old street mains.

Of outstanding importance in connection with this branch of our work were the numerous changes made necessary by the construction by the State of the new

Northern Traffic Artery

Old streets were widened, new streets were built, requiring reconstruction of old mains and services, and much new work all along the traffic way extending from the East Cambridge line across the city nearly to the Mystic River at Wellington Bridge.

The principal items of new construction were 16″ water mains in Somerville Avenue from Congress Street to Medford Street, in Medford Street from Somerville Avenue to Washington Street, in Middlesex Fells Parkway (Fellsway East) from Blakeley Avenue to Mystic Avenue and in Winthrop Avenue from Mystic Avenue to Middlesex Avenue, totalling 3071 feet. The largest single item of reconstruction work was a 16″ main, to replace an old 8″ main, in Middlesex Fells Parkway (Fellsway East) between Broadway and Blakeley Avenue, a length of 604 feet.

Bills to the amount of nearly $15,000 have been rendered to the State for payment for work done by the water department in making necessary alterations in water mains, service pipes, gates, hydrants and water meters.

Middlesex Avenue

The 20″ main in Middlesex Avenue was extended for a distance of 980 feet from a point near Cummings Street to a connection with the old 12″ main near Mystic Avenue, in anticipation of the needs of the large new plant of the First National Stores and to complete the water circulation system in that section.

Ten Hills Farm

A 16″ water main, part of which was laid in 1925 under the westerly driveway of Middlesex Fells Parkway while it was under construction, was completed from a connection with the new Metropolitan Water Works 20″ supply to a connection with the 12″ main in Ten Hills Road at the top of the embankment, furnishing an excellent additional supply of water to the entire Ten Hills Farm section.

A total of 5010 feet of new mains was laid in the streets in this district in 1926, and with the exception of Shore Drive and connections thereto and a part of Temple Road, all the streets in the Ten Hills Farm district are now equipped with water mains, fire hydrants and controlling valves.

Metropolitan Water Works Connection

A 20″ connection was made with the Metropolitan Water Works 48″ main in Middlesex Fells Parkway near the junction of Middlesex Avenue and a Venturi meter was installed thereon.

This work was done by State employees and the expense of the job was borne by the city.

This connection furnishes an additional and abundant supply of water to this rapidly developing section of our city.

Other Construction and Replacement Work

It will be noticed by reference to the table on a preceding page that the 4″ water main in Aldrich Street running southerly from Pearl to Virginia Street was replaced with a 10″ pipe. This was done on account of Northern Artery construction at this point; the remaining distance, from Virginia Street through to Gilman Street, could not be done on account of obstructions but will be relaid another year.

A construction job of 501 feet of 12″ water pipe was laid in New Cross Street from a point near Pennsylvania Avenue to a connection with the main in Mystic Avenue, abolishing a dead end and completing the water pipe installation in that street.

The dead end in the 12″ water main in Mystic Avenue near Fellsway East was also abolished by connecting this pipe with the new main in Middlesex Fells Parkway by laying 42 feet of 12″ pipe, thus improving the water circulation in this area.

Many other piping jobs of minor importance and work done in connection with the Northern Traffic Artery are itemized in the preceding table and need not again be referred to here.

Water Meters

Under the Compulsory Meterage Act of 1907 the cities and towns in the Metropolitan Water District were given 20 years in which to completely meter all old services, with the provision that all new services should also be metered when they were put into use. The work of installation in this city was completed in December, 1926, and we are now 100% metered with a total of 13,732 meters in operation.

Our present rate for metered water is 12 cents per 100 cubic feet (16 cents per 1000 gallons) in any quantity up to 1,000,000 cubic feet per quarter and 8 cents per 100 cubic feet for quantities in excess of that amount, with a minimum charge in all cases of $1.50 per quarter; this rate has been in effect for many years.

The old "annual" rates went automatically out of existence with the complete meterage of the city.

Services, Hydrants, Gates

The water system of the city was expanded during the year by the addition of 258 new service connections, being 7 more than the number installed the previous year; a net increase of 23 fire hydrants, 93 controlling gates, and 2 blowoffs was also made.

Income and Outgo

The water income for 1926 was the largest in the history of the department; the maintenance and construction expenses under the control of the Water Commissioner were also much larger than usual on account of the Northern Traffic Artery work and other important construction jobs. The Metropolitan Water Works Assessment, which is paid from the water income but is not under control of the Water Commissioner, also showed an increase of over 24,000 dollars. Had it not been for this large increase in the Water Assessment of the State and the failure of the State to pay to the City the amount due for work done by the Water Department on the Northern Traffic Artery the Water Works accounts would have shown a surplus instead of a deficit at the close of the year.

State water assessments may be expected to show still further large increases when the new additions to the Metropolitan water system get under way.

Acknowledgment

The water commissioner is grateful to all those who have cooperated with him and the department under his charge, in carrying on the activities of a year filled to a greater degree than usual with service needs and attending problems.

Respectfully submitted,

FRANK E. MERRILL,

Water Commissioner.

SUMMARY OF STATISTICS

FOR THE YEAR ENDING DECEMBER 31, 1926

In the form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics

Population by census of 1920, [illegible]; present, estimated 101,000.
Date of construction: commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water

Census population, 1920, [illegible].
Population on lines of pipe, Dec. 31, 1926, 101,000.
Population supplied, Dec. 31, 1926, [illegible].
Total consumption for the year [illegible] gallons.
Average daily consumption, [illegible] gallons.
Gallons per day to each inhabitant, 78.

Statistics Relating to Distributing System, 1926

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 12,690 feet; discontinued 1,674 feet; net extension, 11,016 feet.
Total now in use, 108.8 miles.
Number of hydrants added during year (public, 23, private, 2) 25.
Number of hydrants (public and private) now in use, 1,322.
Number of stop gates added during year, 93.
Number of stop gates now in use, 2,233.
Number of blow-offs, 195.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron.
Sizes, one-half to eight inches.
Laid 8,071 feet.
Number of service connections made, 258.
Services in use, approximately, 13,732.
Number of fire supplies (sprinkler systems), 71.
Number of meters added, 855; meters and motor registers discontinued, 329; net increase, 526.
Number now in use, 13,732.
Percentage of services metered, 100.
Percentage of water receipts from metered service, 98.3.
Numbr of motors and elevator registers added, 0; removed, 1.
Number now in use, 1 (included in number of meters.)

REVENUE

From Water Rates:—		
Fixture rates	5,158 91	
Meter rates	292,827 03	
Total from consumers		$297,985 94
From other sources:—		
Water service assessments		13,709 58
Labor and materials		10,223 66
Total		$321,919 18

Disposition of balance: applied to municipal purposes

Cost of works to date	$1,327,384 14
Bonded debt at date	None

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, repairs and renewals)	$82,611 38	
Special:—		
Miscellaneous accounts	10,223 66	
Total		$92,835 04
Water Works Buildings		2,584 10
Water works Construction:—		
Mains	$68,604 55	
Services	11,774 82	
Meters	5,954 35	
Total construction		$86,333 72
Metropolitan water assessment		162,676 64
Balance		22,510 32
Total		$321,919 18

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ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

Compliments of

FRANK E. MERRILL,

Water Commissioner.

SOMERVILLE PRINTING CO.
1928

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS
Settled, when part of Charlestown, 1630
(Home of Colonial Governor John Winthrop)
Incorporated a town, 1842
Established a city, 1872

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet
Highest building elevation in the city 145 feet
Area of city, including land and water, about 4.22 square miles
Land, 2,461.50 acres; water and marsh 238.50 acres
Population, 1920 census, 93,033
Present Population, estimated 103,000
Entire population on line of pipe and supplied with water

Water works owned by City of Somerville
Construction commenced in 1868
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds
High service 45 to 100 pounds

Mayor
Hon. Leon M. Conwell

Water Commissioner
Frank E. Merrill

Office of the Water Department
City Hall, Highland Ave., corner School St.

Department Buildings and Yard
Cedar street, near Broadway

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS:

1868-1871

SOMERVILLE MYSTIC WATER COMMITTEE (5)

Acts 1868; Chap. 202

1872 — 1890

SOMERVILLE MYSTIC WATER BOARD (5)

Acts 1871; Chap. 182

1891 — 1897

SOMERVILLE MYSTIC WATER BOARD (3)

Acts 1890; Chap. 218

1898 — 1899

BOARD OF WATER COMMISSIONERS (3)

Acts 1898; Chap. 33

1900 —

WATER COMMISSIONER (1)

Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER

Office of the Water Commissioner,

January, 1928.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1927, this being the fifty-third annual report of the water department and my twenty-seventh as water commissioner:

Revenue and Expenditures

Water bills have been issued as follows:—

"Additional" water charges, amounting to			$1,397 84
"Metered" water charges, amounting to			308,961 71
			$310,359 55
Adjustments			399 43
Income from sale of water			$309,960 12
Receipts; water service assessments		$9,558 24	
Receipts labor and materials sold:—			
Misc. accounts charged	6,256 47		
Adjustments	203 02	6,053 45	
Met. District Commission, Northern Artery	15,527 77		
Adjustments	8,688 46		
		6,839 31	
			22,451 00
Total income of water works			$332,411 12

This amount was used as follows:—

For water works purposes:—

Under Control of the Water Commissioner

Water Works Maintenance	$81,477 79	
Water Works Extension	30,051 92	
Miscellaneous accounts:		
Maintenance	$22,451 00	
		$133,980 71

Not Under Control of the Water Commissioner

Metropolitan water works assessment	$164,205 30	
Maintenance water works buildings	1,567 12	
		$165,772 42
Surplus		32,657 99
Total		$332,411 12

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements

WATER MAINTENANCE ACCOUNT

Appropriations made by Board of Aldermen		$104,300 00
Department accounts; receipts		4,752 42
Water works extension account; receipts		19,259 68
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$81,477 79	
Amount expended for materials used in extension of the water works	19,259 68	
Miscellaneous accounts	22,451 00	
Labor and materials furnished municipal departments	4,752 42	
Balance	371 21	
	$128,312 10	$128,312 10

WATER WORKS EXTENSION ACCOUNT

Appropriations made by Board of Aldermen		$44,000 00
Amount expended for labor and materials used in extension of the water works	30,051 92	
Transferred to other acounts by Board of Aldermen	12,970 00	
Balance	978 08	
	$44,000 00	$44,000 00

Cost of Water Works

The total cost of water works on December 31, 1926, as represented by the expenditures from appropriations for water works extension was	$1,327,384 14
Expended during the year 1927, on extension account	30,051 92
Total expenditures, December 31, 1927	$1,357,436 06

Water Works Income from 1898 and its Distribution

The water income and its distribution from 1898 to 1927, inclusvie, is shown in the following table: —

Total water income		$7,523,791 13

Distribution:—

Water Works Account

Water works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$2,208,440 27	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments	3,152,817 60	
Maintenance Water Works Buildings	20,735 85	
		$5,742,568 72

Other Municipal Accounts

Various municipal departments through specific appropriations and general revenue account	$1,781,222 41
	$7,523,791 13

Water Distribution System—Construction

STREET MAINS

Approximate number of feet of street mains in the city, January 1, 1927, (including hydrant branches and blow-offs)		574,532
Feet of street mains laid in 1927	4,180	
Feet of hydrant branches laid in 1927	97	
Feet of blow-off branches laid in 1927	56	
Feet of street sprinkler hydrant branches laid in 1927	7	
Total feet of pipe laid	4,340	
Feet of pipe removed or replaced	785	
Net increase in feet of pipe		3,555
Total approximate feet of pipe in the city		578,087
Total pipe mileage, approximately		109.48

The sizes and lengths laid and discontinued are as follows:

Size	Feet Laid	Feet Discontinued	Size	Feet Laid	Feet Discontinued
1"	5	0			
2"	0	416	10"	1,049	4
4"	23	286	12"	1,992	0
6"	1,064	79	16"	0	0
8"	207	0	20"	0	0

The pipes constructed and replaced during the year are as follows:—

	Size	Feet Laid	Feet Discontinued	Size
Aldrich Street	10"	286	286	4"
Blakeley Avenue	10"	267		
Crest Hill Road	8"	13		
Flint Street	10"	3		
Garfield Avenue	10"	5	5	6"
Garrison Avenue	10"	450		
Jerome Street	6"	136	136	2"
Holden Green	6"	290		
Hooker Avenue	12"	216		
Kensington Avenue	12"	699		
Lowell Street	10"	9		
Melville Road	8"	13		
Palmer Avenue	6"	84		
Putnam Road	10"	13		
Sanborn Court	10"	3	4	10"
Sanborn Court	6"	189	159	2"
Shore Drive	12"	1,064		
Snow Terrace	6"	121	121	2"
Temple Road	12"	13		
Ten Hills Road	10"	13		
Warwick Place	8"	181	67	6"
Washington Terrace	6"	112		
		4,180	778	
Hydrant Branches and Blow-offs		153	7	
Street Sprinkler Hydrant		7		
		4,340	785	

Hydrants, Gates, etc.

Number of fire hydrants in city January 1, 1927		1,254	
Number set during the year	26		
Number removed during the year	13		
Net increase in number of hydrants		13	
Total number of public fire hydrants			1,267
Number of private fire hydrants, January 1, 1927		68	
Number added:			
Boston & Maine R. R. yard		1	
Total number of private fire hydrants receiving their supply from the city mains			69

Number set on hydrant branches	44		
Number set on blow-off branches	2		
Number set on car-sprinkler hydrant branches	1		
		64	
Number of street gates removed	3		
Number of section gates removed	0		
Number of waterpost gates removed	0		
Number of hydrant branch gates removed	0		
		3	
Net increase in number of gates			61
Total number of gates in city			2,294
Number of check-valves in city January 1, 1927		9	
Number added during the year		0	
Total number of check-valves			9
Number of blow-offs in city January 1, 1927		195	
Number added during the year		2	
Total number of blow-offs			197
Number of waterposts in city January 1, 1927		61	
Number removed during the year		0	
Total number of waterposts			61
Number of drinking fountains in city Jan. 1, 1927		7	
Number removed during the year		0	
Number now in the city			7
Number of car-sprinkler connections January 1, 1927		15	
Number removed during year (1926)		1	
Number set during year (1927)	1		
Number now in city			15
Number of gates in city, January 1, 1927			2,233
Number set during the year for streets	11		
Number of section gates set	6		

Water Service Connections

The number of services actually in use in the city on January 1, 1927 was		13,732
The number of new service connections brought into use during the year was	180	
The number of old service connections restored to use	202	
	382	
The number of service connections shut off during the year for permanent or temporary non-use of water was	257	
Incease in number of services in actual use		125

The total number of services in use on December 31, 1927, was approximately	**13,857**
These services, under state law, are all required to be metered.	
In addition to the above there are fire supplies for private sprinkler systems, which are not at present required to be metered, to the number of	**81**
There are also services supplying public properties, not required to be metered, to the number of	**151**
The number of new service connections installed during the year was 148 but not all of these are yet in use, or "alive."	
The number of feet of pipe laid in making these connections was 5,061.	

Size, number and length of services installed in 1927:—

¾"	118	3,796′
1 "	9	282′
1½"	3	133′
2 "	5	157′
4 "	2	119′
6 "	4	449′
8 "	2	125′
	148	5,061

Location of Fire Supplies	No.	Size
Number of fire supplies installed during 1927 (Included in above)	10	
88 Wheatland St., Tuners Supply Co., Factory	1	6"
Middlesex Ave., First National Stores, Inc., Warehouse	1	8"
172 Medford St., Morris Bornstein, Public Garage & Stores	1	6"
Warwick Pl., Agar Mfg. Co., Factory	1	6"
53-57 Holland St., Hub Confectionery Co., Candy Factory	1	6"
48-50 Wash. St., N. E. Vinegar Wks., Factory	1	6"
West St., Boston Burial Case Co., Factory	1	6"
Skilton Ave., Edwin F. Kemp, Factory	1	6"
259 Lowell St., F. Leroy Fox, Inc., Bakery	1	6"
51 Allen St., White & Leahy, Factory	1	6"

Service pipes to school buildings have been replaced with 6" supplies for fire sprinkler installations to the number of	12
The number of fire pipes laid to public buildings for sprinkler installations, as shown in following table, is	17

Fire Services in Public Buildings

	No.	Size	Installed
Atherton Street, Carr School	1	6"	1927
Boston Street, Pope School	1	6"	1927
Broadway, Lincoln School	**1**	**6"**	**1927**

*Cherry Street, Burns School	1	6"	1916
Concord Square, Knapp School	1	6"	1927
Craigie Street, Morse School	1	6"	1927
Cross Street, Edgerly School	1	6"	1927
Grove Street, Highland School	1	6"	1927
Highland Avenue, Central High School	1	8"	1916
*Holland Street, Western Junior High School	1	6"	1916
Lowell Street, Bingham School	1	6"	1927
Maple Street, Bennett School	1	6"	1927
*Marshall Sreet, Northeastern Junior High School	1	6"	1923
Myrtle Street, Prescott School	1	6"	1927
Powder House Blvd., Cutler School	1	6"	1927
School Street, Cummings School	1	6"	1916
Sycamore Street, Forster School	1	6"	1927
Total	17		

* No sprinklers installed.

Number of Services Supplying Public Property

City Hall	1
Police Station, Bow Street	1
Bath House, Shore Drive	1
City Home, Broadway, 3 (1 shut off)	2
Contagious Hospital	1
Tuberculosis Hospital	1
Water Works	1
Incinerator	1
City Stables, City Road	1
Garbage Plant	1
Sewerage Yard	1
Public Libraries	4
Fire Stations	7
Schools	28
Public Grounds	17
Water Posts	61
Street Sprinklers	15
Drinking Fountains	7
	151

Water Meters

Number of water meters in city, January 1, 1927		13,732
Number installed during the year, new	180	
Number reset	202	
	382	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	257	
Net increase in number of operating meters		125
Number of motor registers (included in above)	1	
Total number of meters in service		13,857
Per cent. of services metered		100

Operating Meters December 31, 1927

Size	**⅝"**	**¾"**	**1"**	**1½"**	**2"**	**3"**	**4"**	**6"**	**Total**
No.	13,350	297	112	24	43	20	7	3	13,856
Motor and elevator registers									1
									13,857

The meters installed in 1927 were classed as follows:—

New services	180
Reset	202
Total	382

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	124
Services permanently discontinued (1 motor register)	34
Replaced by other meters	99
Total	257

The annual report of 1926 shows the progress of metering services from its beginning in 1898 to December 31, 1926, when the city reached the point of 100% meterage. Subsequent data follows:

Year Ending December 31	Population	Number Services Required by Law to be Metered	Per Cent Metered	Daily Per-Capita Consumption of Water
1927	103,000	13,857	100	78

Summary of Pipes and Fixtures of the Water System December 31, 1927

Feet of main pipe (approximately)	578,087
Services in use (approximately)	13,857
Services supplying public property	151
Private fire supplies (sprinkler systems)	81
Fire supplies to public buildings	17
Sprinkler systems installed in public buildings	15
Public fire hydrants	1,267
Private fire hydrants	69
Gates	2,294
Check Valves	9
Meters	13,857
Motor registers	1
Waterposts	61
Car-sprinkler connections	15
Blow-offs	197
Drinking fountains and troughs	7

WATER ASSESSMENTS AND CONSUMPTION

The assessment paid to the Commonwealth by this city as its proportionate part of the cost and operation of the Metropolitan Water Works for the year 1927 was as follows:—

Sinking Fund	$8,918 60
Maintenance	47,719 86
Interest	82,373 49
Maturing Bonds	5,916 41
Brookline Credit	5,129 01
Improvements, etc.	14,147 93
Total payment for 1927	$164,205 30

The amount paid by this city since the beginning in 1898 is as follows:—

Sinking Fund	$449,788 58
Maintenance	702,533 46
Interest	1,847,068 15
Maturing Bonds	41,061 95
Miscellaneous	112,365 46
Total payments to date	$3,152,817 60

There has been credited to the city by the Commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district and water furnished to water companies, the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1926:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	8,197,400	81	July	8,063,600	79
February	8,144,600	81	August	8,043,900	79
March	7,925,500	78	September	8,135,600	80
April	8,007,800	79	October	7,905,200	78
May	7,986,400	79	November	7,385,800	72
June	8,088,600	80	December	7,481,800	73

The consumption for the year was:—

Low-service	2,267,546,000 gallons
High-service system	632,755,000 gallons
Total consumption	2,900,301,000 gallons
Average daily consumption	7,946,000 gallons
Average daily consumption, per capita, for Somerville	78 gallons
Average daily consumption per capita, for Metropolitan district	99 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1927, as registered by the Metropolitan meters.

City or Town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	53	52	53	57	57	67	62	53	58	58	56	56	57
Belmont	51	50	53	59	56	64	59	55	60	58	55	56	56
Boston	124	119	114	112	111	115	116	116	118	118	116	118	116
Chelsea	75	74	72	68	65	68	72	70	74	72	71	72	71
Everett	134	130	117	115	114	116	113	109	112	106	108	106	115
Lexington	53	53	56	61	60	73	71	67	72	71	67	68	64
Malden	61	61	62	62	65	68	66	68	69	70	64	62	65
Medford	53	55	55	55	54	61	56	56	60	60	59	57	57
Melrose	72	64	63	67	62	65	59	58	63	68	65	64	64
Milton	49	48	47	52	53	56	51	45	49	53	54	52	51
Nahant	58	55	57	67	77	141	195	178	150	98	68	59	100
Quincy	75	78	75	75	73	80	80	81	81	80	78	78	78
Revere	66	63	62	60	66	72	78	78	73	68	63	66	68
Somerville	81	81	78	79	79	80	79	79	80	78	72	73	78
Stoneham	57	56	60	58	50	50	49	49	49	50	50	53	52
Swampscott	59	58	58	66	74	104	99	97	90	67	61	63	75
Watertown	87	83	81	79	83	93	85	78	83	84	86	81	84
Winthrop	61	61	65	63	61	70	78	80	71	63	58	57	66
Met. Dist.	104	100	96	95	95	99	99	99	100	100	97	99	99

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1926:

	Total Per Day	Per Capita Per Day	Services Metered*
Milton	703,400	51	100
Stoneham	498,000	52	100
Belmont	938,000	56	100
Arlington	1,528,000	57	100
Medford	2,877,700	57	100
Lexington	529,800	64	99.66
Melrose	1,342,500	64	100
Malden	3,419,000	65	99.64
Winthrop	1,110,700	66	100
Revere	2,377,300	68	86.66
Chelsea	3,441,400	71	99.91
Swampscott	688,300	75	100
Quincy	5,001,000	78	93,65
Somerville	7,946,000	78	100
Watertown	2,256,700	84	100
Nahant	170,600	100	80.47
Everett	4,909,300	115	94.27
Boston	92,751,500	116	96.96
Total District	132,489,200	99	97.57

*Metropolitan District Commission Reportt for 1926.

OPERATION OF THE WATER WORKS

Northern Artery

The changes in our water system caused by the construction of the Northern Artery have now been completed and the State has approved and paid bills for same to the extent of $6,839.31.

Water Income

The water income continues to show a considerable annual increase notwithstanding everything is now on a low metered rate. The income from sale of water in 1927 reached a figure of nearly $310,000.00, while the total income from the operation of the water works was over $332,000.00, as shown more in detail on page 5, and is the largest we have ever reached.

Metropolitan Assessment

The State Annual Water Works Assessments continue to grow also, and it is interesting to note that since the Metropolitan water was first turned into Somerville we have paid to the State over $3,000,000. as our proportionate part of the cost of the works.

Extension of Water Mains

About 1100 feet of new mains were laid in the Ten Hills Farms District and about 1200 feet were installed in other sections of East Somerville. Work was started in the new development on Clarendon Hill at Garrison and Farragut Avenues and about 1,000 feet of pipe have already been laid.

A new development near Washington Street between Beacon Street and the Cambridge city line has been started undeer the control of the Harvard Housing Trust. This tract has been named Holden Green and water mains have been installed to supply all the buildings which will be erected in this plot in Somerville.

Control valves and fire hydrants have been installed on all the new work as it has progressed. A net increase of 13 fire hydrants and 61 gate valves has been made this year.

Maintenance and Reconstruction

The outstanding single job of the season was the renewal of practically all the water service pipes in Highland Avenue for a distance of nearly two miles, in anticipation of a new pavement to be laid down. The service pipes were very old and in such bad condition that they had given us much trouble for a considerable period. The job was a costly one but necessary to be done and it was handled in such a manner that at no time was traffic inconvenienced or other reconstruction work held up.

New Services

About the same number of services (125) were installed as in the previous year. Ten new private fire supplies for sprinkler systems were laid and 12 were installed for the protection of as many school houses; a list of the same is given on an earlier page of this report.

Water Meters

Meter installation dropped off largely on account of the city having reached 100% meterage the previous year. 382 meters were installed but the net increase in operating meters is only 125, these being mostly on new buildings.

Water Consumption

About 3,000,000,000 gallons of water were used in the city in 1927, being an average daily consumption of nearly 8,000,000 gallons and a daily per capita use of 78 gallons, the same as in the previous year. This shows a favorable comparison with the Metropolitan District as a whole, which consumed 99 gallons per capita.

Distribution and Finance

The distribution system of the Water Works is regarded as in excellent condition, and the year closes with surplus water income of $32,657.99, no water debt, and all current bills paid.

In Conclusion

Acknowledging the generous support extended to me by the mayor, aldermen, department heads, and all employees, this report is respectfully submitted.

FRANK E. MERRILL,

Water Commissioner.

SUMMARY OF STATISTICS

FOR THE YEAR ENDING DECEMBER 31, 1927

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics

Population, census 1920, 93033; present, estimated 103,000.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1927, 103,000.
Population supplied, Dec. 31, 1927, 103,000.
Total consumption for the year, 2,900,301,000 gallons.
Average daily consumption, 7,946,000 gallons.
Gallons per day to each inhabitant, 78.

Statistics Relating to Distributing System, 1927

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 7,340 feet; discontinued 785 feet; net extension, 3,555 feet.
Total now in use, 109.48 miles.
Number of hydrants added during year (public, 13, private, 1) 14.
Number of hydrants (public and private) now in use, 1,336.
Number of stop gates added during year, 61.
Number of stop gates now in use, 2,294.
Number of blow-offs, 197.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron.
Sizes, one-half to eight inches.
Laid 5,061 feet.
Number of service connections made, 148.
Services in use, approximately, 13,857.
Number of fire supplies (sprinkler systems), 81.
Number of meters added, 382; meters and motor registers discontinued, 257; net increase, 125.
Number now in use, 13,857.
Percentage of services metered, 100.
Percentage of water receipts from metered service, 98.3.
Number of motors and elevator registers added, 0; removed, 0.
Number now in use, 1 (included in number of meters.)

REVENUE

From Water Rates:—		
Temporary supplies for builders and contractors	$1,395 34	
Meter rates	308,564 78	
Total from consumers		$309,960 12
From other sources:—		
Water service assessments		9,558 24
Labor and materials:		
From private parties		6,053 45
From Commonwealth of Massachusetts on account Northern Artery		6,839 31
Total		$332,411 12

Disposition of balance: applied to municipal purposes.

Cost of works to date	$1,357,436 06
Bonded debt at date	None

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, repairs and renewals)	$81,477 79	
Special:—		
Miscellaneous accounts (including Highland Ave. relaying service pipes)	$22,451 00	
Total		$103,928 79
Water Works Buildings		1,567 12
Water works Construction:—		
Mains	17,100 88	
Services	8,631 30	
Meters	4,319 74	
Total construction		30,051 92
Metropolitan water assessment		164,205 30
Balance		32,657 99
Total		$332,411 12

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Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1928

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ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

MASSACHUSETTS

For the Year 1928

Compliments of

FRANK E. MERRILL,

Water Commissioner.

SOMERVILLE PRINTING CO.
1929

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS
Settled, when part of Charlestown, 1630
(Home of Colonial Governor John Winthrop)
Incorporated a town, 1842
Established a city, 1872

Location: Somerville City Hall (near centre of the city) is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet
Highest building elevation in the city 145 feet
Area of city, including land and water, about 4.22 square miles
Land, 2,461.50 acres; water and marsh 238.50 acres
Population, 1920 census, 93,033
Present population estimated 103,500
Entire population on line of pipe and supplied with water

Water works owned by City of Somerville
Construction commenced in 1868
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds
High service 45 to 100 pounds

Mayor
Hon. Leon M. Conwell

Water Commissioner
Frank E. Merrill

Office of the Water Department
City Hall, Highland Ave., corner School St.

Department Buildings and Yard
Cedar street, near Broadway

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS

1868 — 1871

SOMERVILLE MYSTIC WATER COMMITTEE (5)

Acts 1868; Chap. 202

1872 — 1890

SOMERVILLE MYSTIC WATER BOARD (5)

Acts 1871; Chap. 182

1891 — 1897

SOMERVILLE MYSTIC WATER BOARD (3)

Acts 1890; Chap. 218

1898 — 1899

BOARD OF WATER COMMISSIONERS (3)

Acts 1898; Chap. 33

1900 —

WATER COMMISSIONER (1)

Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER

OFFICE OF THE WATER COMMISSIONER,
January, 1929.

To His Honor, the Mayor, and the Board of Aldermen:—

I present herewith my report for the year ending December 31, 1928, this being the fifty-fourth annual report of the water department and my twenty-eighth as water commissioner:

Revenue and Expenditures

Water bills have been issued as follows:—

Metered: Quarterly Accounts		$195,967 93	
Monthly Accounts		141,821 12	
			$337,789 05
Temporary			904 09
			338,693 14
Amounts abated, and carried forward			2,099 65
(Of this amount one payment of 1,374.80 had been mailed but was not received until the treasurer's books had been closed for the year.)			
Income from sale of water			336,593 49
Receipts; water service assessments		$7,297 80	
Receipts; labor and materials sold:—			
Misc. accounts charged	5,273 30		
Adjustments	164 04		
		5,109 26	
			12,407 06
Total income of water works			$349,000 55

This amount was used as follows:—

Under Control of the Water Commissioner

Water Works Maintenance	88,248 09	
Water Works Extension	23,624 36	
Miscellaneous accounts:		
Maintenance	12,407 06	
		$124,279 51

Not Under Control of the Water Commissioner

Metropolitan water assessment	$184,445 15	
Maintenance water works buildings	1,168 09	
		$185,613 24
Balance to city treasury		39,107 80
Total		$349,000 55

In addition to the appropriations from water income to other municipal purposes enumerated above, water has been furnished without charge to all the city departments that have required its use and it is paid for out of the income from sale of water.

Department Receipts and Disbursements

WATER MAINTENANCE ACCOUNT

Appropriations made by Board of Aldermen....		$102,900 00
Department accounts; receipts		3,222 79
Water works extension accounts; receipts		16,068 49
Amount expended for labor and materials for operation, maintenance, and renewal of the water works	$88,248 09	
Amount expended for materials used in extension of the water works	16,068 49	
Miscellaneous accounts	12,407 06	
Labor and materials furnished municipal departments	3,222 79	
Balance	2,244 85	
	$122,191 28	$122,191 28

WATER WORKS EXTENSION ACCOUNT

Appropriations made by Board of Aldermen....		$35,000 00
Department accounts; receipts		569 24
Amount expended for labor and materials used in extension of the water works......	$23,624 36	
Labor and materials furnished municipal departments	569 24	
Transferred to other accounts by Board of Aldermen	11,270 00	
Balance	105 64	
	$35,569 24	$35,569 24

Cost of Water Works

The total cost of water works on December 31, 1927, as represented by the expenditures from appropriations for water works extension was	$1,357,436 06
Expended during the year 1928, on extension account	23,624 36
Total expenditures, December 31, 1928....	$1,381,060 42

Water Works Income from 1898 and its Distribution

The water income and its distribution from 1898 to 1928, inclusive, is shown in the following table:—

Total water income		$7,872,791 68

Distribution:—

Water Works Account

Water Works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$2,332,719 78	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Assessments	3,337,262 75	
Maintenance Water Works Buildings	21,903 94	
		$6,052,461 47

Other Municipal Accounts

Various municipal departments through specific appropriations and general revenue account	$1,820,330 21
	$7,872,791 68

Water Distribution System—Construction

STREET MAINS

Approximate number of feet of street mains in the city, January 1, 1928, (including hydrant branches and blow-offs)		578,087
Feet of street mains laid in 1928	5,016	
Feet of hydrant branches laid in 1928	317	
Feet of blow-off branches laid in 1928	60	
Feet of street sprinkler hydrant branches laid in 1928	13	
Total feet of pipe laid	5,406	
Feet of pipe removed or replaced	2,108	
Net increase in feet of pipe		3,298
Total approximate feet of pipe in the city		581,385
Total pipe mileage, approximately		110.11

The sizes and lengths laid and discontinued are as follows:—

Size	Feet Laid	Feet Discontinued
1"	92	92
1½"	0	294
2"	5	452
4"	135	21
6"	1,022	1,244
8"	0	0
10"	410	5
12"	3,675	0
16"	67	0
20"	0	0

The pipes constructed and replaced during the year are as follows:—

	Size	Feet Laid	Feet Discontinued	Size
Albion Place	6"	172	172	1½"
Bailey Road	10"	11		
Cinder Road	6"	10		
	12"	1,128		
	16"	67		
Endicott Avenue	10"	207		
Farragut Avenue	6"	4		
	10"	161		
Fitchburg Street	12"	101		
Gov. Winthrop Road	10"	11	11	6"
Hooker Avenue	12"	341		
Industry Road	12"	50		
Linwood Place	4"	122	122	1½"
Main Street	6"	120	120	2"
Mystic Avenue	6"	8		
	10"	4		
	12"	44	56	6"
North Union Street	12"	477	471	6"
Puritan Road	10"	11		
Putnam Road	10"	5	5	10"
Remick Court	1"	92	92	1"
Shore Drive	12"	881	658	6"
	6"	4		
Taunton Street	6"	294	294	2"
Temple Road	12"	653		
Upland Park	2"	5	38	2"
	6"	33		
		5,016	2,039	
Hydrant Branches	6"	317	48	6"
Blowoffs	6"	60		
Street Sprinkler Hydrants	4"	13	21	4"
		5,406	2,108	

Hydrants, Gates, Etc.

Number of fire hydrants in city January 1, 1928		1,267	
Number set during the year	28		
Number removed during the year	15		
Net increase in number of hydrants		13	
Total number of public fire hydrants			1,280
Number of private fire hydrants, January 1, 1927		68	
Number added:			
Boston & Maine R. R. yard		1	
Ford Motor Co. plant		11	
Total number of private fire hydrants receiving their supply from the city mains			80
Number of gates in the city Jan. 1, 1928			2,294
Number set during the year for streets	19		
Number of section gates set	7		
Number set on hydrant branches	28		
Number set on blow-off branches	2		
Number set on car-sprinkler hydrant branches	1		
		57	
Number of street gates removed	3		
Number of section gates removed	1		
Number of street sprinkler gates removed	1		
Number of hydrant branch gates removed	3		
		8	
Net increase in number of gates			49
Total number of gates in city			2,343
Number of check-valves in city January 1, 1928		9	
Number added during the year		0	
Total number of check-valves			9
Number of blow-offs in city January 1, 1928		197	
Number added during the year		2	
Total number of blow offs			199
Number of waterposts in city January 1, 1928		61	
Number removed during the year		0	
Total number of waterposts			61
Number of drinking fountains in city Jan. 1, 1928		7	
Number added during the year		1	
Number now in the city			8
Number of car-sprinkler connections January 1, 1928		15	
Number removed during year		1	
Number set during year	1		
Number now in city			15

Water Service Connections

The number of services actually in use in the city on January 1, 1928 was		13,857
The number of new service connections brought into use during the year was	166	
The number of old service connections restored to use	284	
	450	
The number of service connections shut off during the year for permanent or temporary non-use of water was	330	
Increase in number of services in actual use		120
The total number of services in use on Dec. 31, 1928, was approximately		13,977
These services, under state law, are all required to be metered.		
In addition to the above there are fire supplies for private sprinkler systems, which are not at present required to be metered, to the number of		89
There are also services suplying public properties, to the number of		152

The number of new service connections installed during the year was 148 but not all of these are yet in use, or "alive."

The number of feet of pipe laid in making these connections was 5397.

Size, number and length of services installed in 1928:—

¾"	130	4,766'
1 "	1	35'
1½"	2	24'
2 "	6	153'
4 "	0	0'
6 "	8	302'
8 "	1	117'
	148	5,397'

Number of fire supplies installed during 1928 (Included in above)	9	
Location of Fire Supplies	No.	Size
Fitchburg St., No. 8: James A. Kiley Co., Paint Shop	1	6"
Bow Street: Manhattan Laundry, Laundry	1	6"
Cross St., East: C. E. Hall & Sons, Garage	1	6"
Garfield Avenue: C. E. Hall & Sons, Garage (reduced to 4" at building)	1	6"
Washington St. No. 334: Parkdale Garage Garage	1	6"
North Union Street: Vacuum Co., Factory	1	8"
School Street: City of Somerville, High School (west wing)	1	6"
Cummings Street: Jerguson Gage & Valve Co. Factory	1	6"

Medford Street No. 350: Beacon Warehousing Trust, Warehouse	1	6″
Four service pipes to the following school buildings have been replaced with 6″ supplies for fire sprinkler installations:		
Glines School, Jaques St.		
Forster School addition, Evergreen Ave.		
Brown School, Willow Ave.		
Hodgkins School, Holland St.		
One new fire pipe to High School (west wing)	1	
The total number of fire pipes laid to public buildings for sprinkler installations, as shown in following table, is		23

Fire Services in Public Buildings

	No.	Size	Installed
Atherton Street, Carr School	1	6″	1927
Boston Street, Pope School	1	6″	1927
Broadway, Lincoln School	1	6″	1927
Broadway, City Home	1	6″	1916
Cherry Street, Burns School	1	6″	1916
Concord Square, Knapp School	1	6″	1927
Craigie Street, Morse School	1	6″	1927
Cross Street, Edgerly School	1	6″	1927
Evergreen Avenue, Forster School Annex	1	6″	1923
Grove Street, Highland School	1	6″	1927
Highland Avenue, Central High School	1	8″	1916
*Holland Street, Western Junior High School	1	6″	1916
Holland Street, Hodgkins School	1	6″	1928
Jaques Street, Glines School	1	6″	1928
Lowell Street, Bingham School	1	6″	1927
Maple Street, Bennett School	1	6″	1927
*Marshall Street, Northeastern Junior High School	1	6″	1923
Myrtle Street, Prescott School	1	6″	1927
Powder House Blvd., Cutler School	1	6″	1927
School Street, Cummings School	1	6″	1916
School Street, High School (west wing)	1	6″	1928
Sycamore Street, Forster School	1	6″	1927
Willow Avenue, Brown School	1	6″	1928
Total	23		

* No sprinklers installed.

Number of Services Supplying Public Property

City Hall	1
Police Station, Bow Street	1
Bath House, Shore Drive	1
City Home, Broadway, 3 (1 shut off)	2
Contagious Hospital	1
Tuberculosis Hospital	1
Water Works	1
Incinerator	1
City Stables, City Road	1

Garbage Plant	1
Sewerage Yard	1
Public Libraries	4
Fire Stations	7
Schools	29
Public Grounds	17
Water Posts	61
Street Sprinklers	15
Drinking Fountains	8
	153
City Hall Annex, (old library building) abandoned	1
Total	152

Water Meters

Number of water meters in city, January 1, 1928		13,857
Number installed during the year, new	166	
Number reset	284	
	450	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	330	
Net increase in number of operating meters		120
Number of motor registers (included in above)	1	
Total number of meters in service		13,977
Per cent. of services metered		100

Operating Meters December 31, 1928

Size	⅝"	¾"	1"	1½"	2"	3"	4"	6"	Total
No.	13,462	297	111	29	47	20	7	3	13,976
Motor and elevator registers									1
									13,977

The meters installed in 1928 were classed as follows:—

New services	166
Reset	284
Total	450

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	128
Services permanently discontinued	9
Replaced by other meters	193
Total	330

The annual report of 1926 shows the progress of metering services from its beginning in 1898 to December 31, 1926, when the city reached the point of 100% meterage. Subsequent data follows:

Year Ending December 31	Population	Number Services Required by Law to be Metered	Per Cent Metered	Daily Per-Capita Consumption of Water
1927	103,000	13,857	100	78
1928	103,500	13,977	100	81

Summary of Pipes and Fixtures of the Water System
December 31, 1928

Feet of main pipe (approximately)	581,385
Miles of main pipe (approximately)	110.11
Services in use (approximately)	13,977
Services supplying public property	152
Private fire supplies (sprinkler systems)	89
Fire supplies to public buildings	23
Sprinkler systems installed in public buildings	21
Public fire hydrants	1,280
Private fire hydrants	80
Gates	2,343
Check Valves	9
Meters (including 1 motor register)	13,977
Waterposts	61
Car-sprinkler connections	15
Blow-offs	199
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION

The assessment paid to the Commonwealth by this city as its proportionate part of the cost and operation of the Metropolitan Water Works for the year 1928 was as follows:—

Sinking Fund	$8,712 93
Maintenance	62,920 48
Interest	84,190 42
Maturing Bonds	7,477 36
Brookline Credit	5,302 87
Improvements, etc.	15,841 09
Total payment for 1928	$184,445 15

The amount paid by this city since the beginning in 1898 is as follows:—

Sinking Fund	$458,501 51
Maintenance	765,453 94
Interest	1,931,258 57
Maturing Bonds	48,539 31
Miscellaneous	133,509 42
Total payments to date	$3,337,262 75

There has been credited to the city by the Commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district and water furnished to water companies, the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi meters, operated by the Metropolitan water works, is shown below by months for the year 1928:—

Month	Gallons per day	Gallons per capita	Month	Gallons per day	Gallons per capita
January	7,655,900	75	July	8,868,800	86
February	7,856,500	77	August	8,835,900	86
March	7,734,700	76	September	8,630,600	84
April	7,857,500	77	October	9,001,300	87
May	7,840,300	76	November	8,674,000	84
June	8,057,700	79	December	8,651,200	84

The consumption for the year was:—

Low-service	2,366,408,000 gallons
High-service system	674,254,000 gallons
Total consumption	3,040,662,000 gallons
Average daily consumption	8,307,800 gallons
Average daily consumption, per capita for Somerville	81 gallons
Average daily consumption per capita, for Metropolitan district	100 gallons

The following table shows the daily per capita consumption of water in the cities and towns in the Metropolitan Water District for the year 1928, as registered by the Metropolitan meters.

City or Town	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	57	58	57	60	63	66	68	68	63	64	60	59	62
Belmont	56	58	58	61	63	64	67	65	66	69	63	59	62
Boston	122	120	115	114	115	115	119	120	118	118	115	116	117
Chelsea	75	76	73	71	71	71	74	77	80	75	72	73	74
Everett	111	106	109	107	106	113	123	133	134	131	130	105	117
Lexington	68	65	67	69	75	79	84	87	80	80	78	77	76
Malden	62	62	62	61	63	63	65	67	69	67	67	69	65
Medford	55	54	52	52	51	54	57	59	59	59	58	55	56
Melrose	62	62	61	64	66	67	69	70	70	70	70	69	67
Milton	50	51	53	51	55	56	51	52	51	54	51	51	52
Nahant	57	61	58	56	69	119	174	192	159	103	70	62	98
Quincy	76	75	76	73	75	77	80	85	83	82	81	80	78
Revere	67	65	60	58	63	63	72	74	66	64	56	56	64
Somerville	75	77	76	77	76	79	86	86	84	87	84	84	81
Stoneham	52	54	54	54	55	57	61	64	64	64	63	61	59
Swampscott	65	66	62	63	75	89	98	107	102	70	58	52	76
Watertown	85	79	79	79	79	79	80	82	81	85	82	77	81
Winthrop	56	55	55	56	60	62	74	80	70	61	58	56	62
Met. Dist.	101	100	97	96	97	98	102	104	102	101	99	98	100

The district, in order of per capita consumption, beginning with the lowest, stands as follows for the year 1928:

	Total Per Day	Per Capita Per Day	Services Metered*
Milton	740,000	52	100
Medford	2,902,700	56	100
Stoneham	568,200	59	100
Arlington	1,717,500	62	100
Belmont	1,079,100	62	100
Winthrop	1,070,700	62	100
Revere	2,272,000	64	93.05
Malden	3,446,700	65	99.37
Melrose	1,420,000	67	100
Chelsea	3,618,700	74	100
Lexington	637,900	76	100
Swampscott	706,700	76	100
Quincy	5,195,600	78	96.45
Somerville	8,307,800	81	100
Watertown	2,229,600	81	100
Nahant	171,200	98	99.30
Everett	5,038,800	117	100
Boston	94,570,000	117	98
Total District	135,693,200	100	98.43

* Metropolitan District Commission Report for 1927.

Construction and Renewals

The principal construction work of the year has been the completion of pipe installation in the streets comprising the "Ten Hills Farm" district. In this area, besides several side street connections, 881 feet of 12" pipe were laid in Shore Drive and 658 feet of 6" pipe were abandoned in old Melrose street, now a part of Shore Drive. This completes the piping from Temple road along the Mystic river to the north line of Mystic avenue where a connection was made with the old 6" branch crossing that street to the 12" main.

In Temple road there were laid 653 feet of 12" pipe, connecting up all the side street dead ends.

Into this area there are now four feeding lines, viz: one 6" and two 12" from Mystic avenue and one 16" from the Metropolitan 48" pipe in Fellsway, forming with the 10" and 12" mains laid through the several streets of this development a full and complete circulation of water for both domestic and fire purposes. This territory is also well supplied with hydrants for fire protection, and valves for controlling the flow of the water.

In Cinder road, the name given to a 50-foot driveway over 1100 feet long with entrance from Middlesex avenue between the Ford plant and that of the First National Stores, released to the city by the Boston and Maine Railroad, there were laid

67 feet of 16" and 1128 feet of 12" pipe to reach a new industry which was being established and to supply other industries which the railroad people assured us were forthcoming but which to date have not materialized. There is little doubt, however, that they will appear in time as the development of a large area for industrial sites is progressing.

In connection with the construction and permanent paving of North Union street the old 6" water pipe was removed and a 12" main 477 feet in length was substituted in anticipation of industrial development in that section.

In Fitchburg street 101 feet of 12" pipe were laid to provide additional supply in that industrial locality.

In Farragut avenue and Endicott avenue 368 feet of 10" pipe were laid and 341 feet of 12" main were laid in Hooker avenue, connecting the dead ends of Garrison avenue, Farragut avenue and Endicott avenue.

In Taunton street the old 2" pipe which had become troublesome was removed and a 6" main was laid in its place.

In Albion place, on account of new building construction, the old 1½" pipe was removed and a 6" main was substituted.

In Linwood place the 1½" service was also removed as it was almost completely filled with rust, and a 4" cast-iron pipe was laid.

In Main street, on account of the permanent paving of the street, the old 2" pipe at the dead end was removed and a 6" main was laid to the Medford city line.

Service Pipes

Although available land for residential development is rapidly becoming exhausted there were 148 service pipes laid into new buildings of all descriptions, the same number as in the previous year. The total number of services brought into original use and restored to use during the year was 450 and the number permanently or temporarily discontinued was 330, making a total increase in actual use of 120 services. Of these services nine were for sprinkler systems. One of these new sprinkler connections was for an additional supply to the High School group of buildings.

Old services to four other school buildings were replaced with 6" pipes, making 21 such buildings now provided with fire pipes, nineteen of which are equipped with sprinklers.

Many of the older service pipes throughout the city are becoming defective through the action of rust and other conditions and the work of replacement is gradually going on.

Poor Pressures

The name "poor pressure" is commonly given to cases where the proper flow of water through the service pipe is reduced by corrosion of the pipes leading to or within the building, or both.

During the past year 1661 complaints of this nature were given attention and the troubles remedied by cleaning out or replacing the pipes. Many of the pipes lying within the private premises are defective and often there is trouble also at the street end of the services. The complaints have now become so numerous and the cost of this work has become so great it is proposed hereafter to make a nominal charge to the property owner to cover a part of the cost of benefiting his service within his own premises between the street line and the meter, the city at its own expense to take care of the part lying within the street. The water commissioner has fixed this charge for the present at two dollars.

Water Meters

450 meters were installed and reset during the year and 330 were discontinued or replaced, making a net increase in operating meters of 120. Water supplied for public purposes is neither measured nor accounted for by the several municipal departments; otherwise the city is 100 per cent metered.

Fire Hydrants

There are now 1280 fire hydrants connected directly with the city's mains, and 80 private fire hydrants located in factory and railroad yards but supplied with city water. All the city's hydrants have been inspected, locations remeasured, and water pressures taken.

As no list of hydrant locations has been published for many years one is included with this report for information and reference, showing locations of the hydrants, the high- or low-service system to which they are attached, and the pressure of water at the hydrant outlets.

Water Consumption and Revenue

With the growth of the city residentially and industrially the consumption of water also increases and the quantity used in Somerville in 1928, as indicated by the State's meters, was more than three billion gallons, an average of over eight million gallons a day or 81 gallons daily for each person living in the city, based on its present population.

This increased water consumption is again reflected in increased revenue, the water income for the year showing a large increase over last year and the total being much the largest in our history.

Metropolitan Water Assessments

With the authorization by the legislature of the expenditure of some sixty-five million dollars for an additional water supply to the metropolitan district from Ware river and Swift river sources, and actual progress on this work well under way, our State water assessments are being very largely increased and will continue in this direction until the estimated peak is reached in the year 1935, when the yearly assessments are expected to reach a figure of about $301,000 which is about $117,000 greater than the 1928 assessment which, in turn, is some $20,000 higher than that of the year before. The future assessments are sure to become a very large tax upon our water income.

Increase in Water Rates

It is the duty of the Water Commissioner to fix the water rates to be paid for use of the city water, subject to approval of the Mayor and of the Metropolitan District Commission.

As all the expenses of the water department, including the State assessment, are paid from water income, no part being paid out of the tax levy, it is obviously necessary to make that income sufficiently large to provide for these State requirements as well as all our local costs of administration, operation, maintenance and construction. This income can be substantially increased only through an increase in the rates paid for water by its consumers.

As the State assessments for water will be largely increased in the immediate future, as outlined above, it has fallen upon the Water Commissioner to establish new rates to meet existing conditions and this he has accomplished after much careful investigation and study.

It is not anticipated that the water rates now fixed by him will be sufficiently high, under present estimates of the State assessments, to carry the income in needed amount over the peak, and it will probably be necessary to make other rate advances in a few years.

The schedule given below has been submitted to the Mayor and to the Metropolitan District Commission. It has been approved by His Honor, the Mayor, to become effective as early as possible in 1929, and has been approved by the

Metropolitan District Commission with the proviso that no later than January 1, 1931, the 8-cent rate to large consumers shall be abolished.

The new rates have been advertised officially in the local newspaper and notices have been mailed to every property owner whose name appears on our records.

The new schedule of water rates is as follows:

For any part of the first 300,000 cubic feet of water used in a month, 15 cents for each 100 cubic feet.

For any part of the second 300,000 cubic feet of water used in the same month, 10 cents for each 100 cubic feet.

For any quantity over 600,000 cubic feet of water used in the same month, 8 cents for each 100 cubic feet.

EXCEPT that a charge of $1.50 will be made for any quantity of water under 1,000 cubic feet used in a quarter.

Water Distribution System

The general physical condition of the water works is good. Renewals and enlargements of some of the old and small mains have been made and this policy should be continued especially in the high-service area.

To keep abreast of the present and prospective industrial development in East Somerville, I recommend your consideration of an appropriation sufficient to relay the old 6" main in Mystic avenue between Austin street and North Union street with a 16" main, thus completing for the present, the enlarged water distribution system in that street and its vicinity.

Another recommendation which I urge upon your consideration is an appropriation of a sufficient amount to lay a 16" main through Cedar street from a point near Broadway to a connection with the existing high-service main at Hudson street.

This, like the Mystic avenue recommendation, is a non-revenue proposition, its purpose being to bring an additional supply of high-pressure water from the Metropolitan pipe in Broadway into the Spring Hill high-service district.

There is at present no feed from the Metropolitan system into this elevated part of the city between Clarendon Hill and Central street, and the high-service system in this area is, in my judgment, in need of strengthening in the manner proposed.

There is already an ample supply of water throughout this district for all ordinary purposes but the experiences of some of our neighboring cities with shortage of water during conflagration periods may well be heeded and provision made in our own city to obviate such situations so far as it is possible.

An abundance of water with a good fire-fighting equipment is the remedy for a large fire but the very best of fire engines and man-power is of no avail without an adequate supply of water to back up their work.

The capacity of pumping engines has been greatly increased in recent years and the excessive draught of the modern high-powered equipment on the older and smaller water mains is also a matter to be seriously considered.

Every reasonable means should be taken for the protection of the lives and property of our citizens, it seems to me, even if the actual need of protection is not immediate.

The area which would be particularly benefited by this new feed line is built up almost wholly and solidly of frame structures and includes the plant of the Somerville hospital.

Financial Situation

The total water revenue for the year was $349,000.55; the amount expended for water maintenance account, which includes administration, operation, renewals and upkeep, was $88,248.09; for construction work, $23,624.36; miscellaneous accounts, $12,407.06; buildings maintenance, $1,168.09; Metropolitan water assessment, $184,445.15; leaving a balance in the city treasury of $39,107.80.

There is no water debt and all current bills to the close of the year are paid.

Conclusion

With grateful acknowledgment of the support given me by all with whom my duties bring me into contact, this report is respectfully submitted.

FRANK E. MERRILL,

Water Commissioner.

SUMMARY OF STATISTICS

FOR THE YEAR ENDING DECEMBER 31, 1928

In form recommended by the New England Water Works Association.

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics

Population, census 1920, 93033; present, estimated 103,500.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1928, 103,500.
Population supplied, Dec. 31, 1928, 103,500.
Total consumption for the year, 3,040,662,000 gallons.
Average daily consumption, 8,307,800 gallons.
Gallons per day to each inhabitant, 81.

Statistics Relating to Distributing System, 1928

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 5,406 feet; discontinued 2,108 feet; net extension, 3,298 feet.
Total now in use, 110.11 miles.
Number of hydrants added during year: public, 13; private, 12.
Number of hydrants (public and private) now in use, 1,360.
Number of stop gates added during year, net increase, 49.
Number of stop gates now in use, 2,343.
Number of blow-offs, 199.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron; brass.
Sizes, one-half to eight inches.
Laid 5,397 feet.
Number of service connections made, 148.
Services in use, approximately, 13,977.
Number of private fire supplies (sprinkler systems), 89.
Number of meters added, 450; meters and motor registers discontinued, 330; net increase, 120.
Number now in use, 13,977.
Percentage of services metered, 100.
Percentage of water receipts from metered service, 98.3.
Number of motors and elevator registers added, 0; removed, 0.
Number now in use, 1 (included in number of meters.)

REVENUE

From Water Rates:—		
Temporary supplies for builders and contractors	$904 09	
Meter rates	337,789 05	
	338,693 14	
Abated and forwarded	2,099 65	
Total from consumers		$336,593 49
From other sources:—		
Water service assessments		7.297.80
Labor and materials:		
From private parties		5,109 26
Total		$349,000 55

Disposition of balance: applied to municipal purposes.
Cost of works to date $1,381,060 42
Bonded debt at date........ None

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, Repairs and renewals	$88,248 09	
Special:—		
Miscellaneous accounts	$12,407 06	
Total		$100,655 15
Water Works Buildings		1,168 09
Water Works Construction:—		
Mains	14,664 65	
Services	6,819 76	
Meters	2,139 95	
Total construction		23,624 36
Metropolitan water assessment		184,445 15
Balance		39,107 80
Total		$349,000 55

LIST OF FIRE HYDRANTS

H indicates High Service
L indicates Low Service
G indicates a gate on the hydrant branch
Figures indicate pressure in pounds at hydrant outlet

Aberdeen Road, 239 feet west from Cedar Street	L	48	
Acadia Park, 186 feet north from Somerville Avenue	L	54	
Adams Street, 11 feet south from Broadway	H	50	
219 feet south from Broadway	H	49	
249 feet north from Medford Street	H	61	
10 feet north from Medford Street	H	69	
Adrian Street, 94 feet east from Marion Street	L	65	
222 feet west from Joseph Street	L	65	
Albion Street, 138 feet west from Bellevue Terrace	L	49	G
145 feet west from Albion Terrace	L	50	
217 feet east from Lowell Street	L	46	
14 feet west from Center Street	L	39	G
297 feet west from Central Street	L	38	
Aldersey Street, 233 feet east from Vinal Avenue	H	73	
Alewife Brook Parkway, 855 feet south from High Street	L	65	
496 feet south from High Street	L	66	G
At foot of High Street	L	66	G
46 feet north from Fairfax Street	L	65	G
Allen Street, 45 feet south from Somerville Avenue	L	61	
322 feet south from Somerville Avenue	L	62	
9 feet north from Charlestown Street	L	62	G
Allston Street, 208 feet east from Cross Street	L	54	
514 feet east from Cross Street	L	56	
Alpine Street, 279 feet east from Cedar Street	L	50	
81 feet west from Princeton Street	L	48	G
298 feet west from Lowell Street	L	51	
Ames Street, 132 feet west from Central Street	L	37	
Appleton Street, 41 feet west from Willow Avenue	L	51	
2 feet east from Clifton Street	L	50	
Arlington Street, 36 feet east from Hathorne Street	L	52	G
Arthur Street, 79 feet south from Broadway	L	62	
Ash Avenue, 245 feet south from East Albion Street	L	42	
Ashland Street, 6 feet south from Summer Street	L	44	
211 feet north from Sartwell Avenue	L	44	
Atherton Street, 31 feet east from Spring Street	H	77	G
Auburn Avenue, 237 feet west from Cross Street	L	57	
466 feet west from Cross Street	L	54	G
Austin Street, 3 feet north from Broadway	L	51	
62 feet north from Benedict Street	L	40	
77 feet south from Mystic Avenue	L	57	
Avon Street, 270 feet west from School Street	H	80	
571 feet west from School Street	H	76	
234 feet east from Central Street	H	71	
Bailey Road, 79 feet east from Shore Drive	L	63	G
405 feet west from Temple Road	L	62	G
45 feet west from Temple Road	L	61	G
135 feet east from Temple Road	L	61	G
433 feet west from Middlesex Fellsway	L	63	G
118 feet west from Middlesex Fellsway	L	64	G
Bailey Street, 80 feet east from North Street	L	51	
Banks Street, 7 feet north from Elm Street	L	55	
383 feet north from Elm Street	L	50	

Bartlett Street, 231 feet south from Broadway	H	50	
224 feet north from Medford Street	H	55	
11 feet south from Robinson Street	L	40	
15 feet south from Ames Street	L	38	
Barton Street, 129 feet north from Broadway	H	80	
7 feet south from Hamilton Road	H	84	G
Bay State Avenue, 38 feet south from Broadway	L	51	
7 feet south from Mallet Street	L	49	
92 feet north from Kidder Avenue	L	48	
Beacon Street, 12 feet east from Concord Avenue	L	59	G
208 feet east from Buckingham Street	L	56	G
29 feet west from Buckingham Street	L	55	G
8 feet west from Waldo Avenue	L	54	G
79 feet west from Calvin Street	L	57	G
26 feet south from Washington Street	L	58	G
17 feet east from Durham Street	L	62	G
69 feet east from Park Street	L	60	G
5 feet west from Ivaloo Street	L	61	G
16 feet west from Kent Street	L	62	G
3 feet west from Beckwith Circle	L	62	G
41 feet east from Sacramento Street	L	63	
48 feet west from Sacramento Street	L	62	G
11 feet east from Stanford Terrace	L	61	G
72 feet west from Forest Street	L	55	G
76 feet south from Roseland Street	L	53	G
Beech Street, 5 feet south from Atherton Street	L	49	
Belknap Street, 60 feet north from Broadway	H	80	
81 feet south from Hamilton Road	H	79	
Belmont Place, 176 feet east from Belmont Street	H	75	
Belmont Street, 205 feet north from Spring Hill Terrace	H	63	G
141 feet south from Spring Hill Terrace	H	49	G
244 feet south from Summer Street	H	67	
11 feet north from Belmont Place	H	77	
Opp. Belmont Square	H	84	
On south line of Pitman Street	H	91	
Benedict Street, 32 feet east from Mystic Street	L	43	G
Bennett Street, 10 feet east from Prospect Street	L	61	G
Benton Road, 28 feet south from Highland Avenue	H	67	
2 feet north from Cambria Street	H	67	G
Berkeley Street, 29 feet west from School Street	H	79	
151 feet east from Hersey Street	H	72	
213 feet west from Hersey Street	H	72	
7 feet east from Central Street	H	67	
Billingham Street, 12 feet south from Summit Street	L	46	G
Blakeley Avenue, 37 feet east from Fellsway East	L	63	G
Bolton Street, 2 feet south from Oak Street	L	66	
200 feet north from Houghton Street	L	65	
Bonair Street, 115 feet east from Walnut Street	L	52	
Opp. Melvin Street	L	55	G
120 feet east from Arthur Street	L	58	
97 feet east from Autumn Street	L	60	
26 feet west from Cross Street	L	60	
Bond Street, 63 feet south from Jaques Street	L	37	G
Bonner Avenue, 1 foot north from Homer Square	H	92	
Boston Avenue, 290 feet north from Morrison Avenue	L	51	
10 feet south from Kidder Avenue	L	54	
265 feet north from Kidder Avenue	L	52	G
23 feet east of Pearson Avenue	L	51	

68 feet west from Highland Road	L	50	
3 feet west from Irvington Road	L	61	G
87 feet east from Mystic Valley Parkway	L	64	G
Boston Street, 144 feet west from Hamlet Street	H	60	
97 feet west from Greenville Street	H	68	
11 feet west from Prospect Hill Avenue	H	75	
7 feet west from Munroe Street	H	77	
Bow Street, 36 feet north from Bow Street Place	L	59	
101 feet west from Warren Avenue	H	93	G
71 feet west from Walnut Street	H	93	G
25 feet south from Summer Street	L	58	
Bow Street Place, 193 feet west from Bow Street	L	62	G
Bowdoin Street, 64 feet south from Freemont Avenue	L	66	
Bradley Street, 33 feet south from Radcliffe Road	L	53	
Brastow Avenue, 114 feet west from Lowell Street	H	48	
201 feet east from Porter Street	H	53	
Broadway, 227 feet east from Alewife Brook Parkway	H	92	
8 feet west from Garrison Avenue	H	86	
7 feet west from Endicott Avenue	H	81	
71 feet east from Weston Avenue	H	80	G
31 feet east from Westminster Street	H	77	
11 feet west from Packard Avenue	H	89	G
7 feet west from Simpson Avenue	L	56	G
5 feet west from Billingham Street	L	53	
182 feet west from College Avenue	L	52	G
120 feet east from Warner Street	L	50	
42 feet east from Josephine Avenue	L	52	
253 feet west from Wilson Avenue	L	49	
6 feet east from Wilson Avenue	L	47	
4 feet east from Cedar Street	H	86	G
247 feet east from Cedar Street	H	82	G
316 feet east from Cedar Street	L	45	G
16 feet west from City Road	L	43	
265 feet west from Sycamore Street	H	58	
120 feet west from Sycamore Street	H	58	G
9 feet west from Thurston Street	H	69	
9 feet west from Winter Hill Circle	H	65	
3 feet west from School Street	H	80	
61 feet west from Marshall Street	L	48	
116 feet east of Marshall Street	L	52	
156 feet west from Grant Street	L	55	
4 feet east from Sargent Avenue	L	55	
32 feet west from Walnut Street	L	59	G
7 feet west from Montgomery Avenue	L	62	G
2 feet west from Melvin Street	L	63	G
70 feet west from Kensington Avenue	L	63	G
7 feet west from Autumn Street	L	63	G
13 feet west from Cross Street	L	61	G
28 feet west from Minnesota Avenue	L	60	
21 feet east from Rush Street	L	60	G
8 feet east from Glen Street	L	58	G
79 feet east from Wisconsin Avenue	L	58	
84 feet east from Cutter Street	L	55	
63 feet east from Illinois Avenue	L	57	
62 feet west from Pennsylvania Avenue	L	52	
54 feet east from Pennsylvania Avenue	L	52	G
20 feet west from Broadway Place	L	53	

19 feet west from George Street	L	53	
90 feet east from Mt. Pleasant Street	L	54	G
Bromfield Road, 201 feet north from Warner Street	L	55	
579 feet north from Warner Street	L	57	
275 feet south from Dearborn Road	L	57	
Browning Road, 137 feet east from Central Street	H	60	
302 feet west from Sycamore Street	H	58	
Buckingham Street, 1 foot south from Dimick Street	L	57	G
Buena Vista Road, 164 feet south from Holland Street	L	60	
Burnham Street, 85 feet south from Powder House Blvd.	L	56	
Burnside Avenue, 307 feet north from Elm Street	L	55	
123 feet south from Summer Street	L	50	
Cady Avenue, Opp. Corinthian Road	L	58	G
Caldwell Avenue, 208 feet south from Washington Street	L	60	G
Calvin Street, 36 feet south from Dimick Street	L	58	G
Cambria Street, 131 feet west from Central Street	H	72	
Cameron Avenue, 165 feet south from Holland Street	H	90	
Opp. Mead Street	H	93	G
26 feet south from Glendale Avenue	H	95	
Campbell Park, 256 feet west from Meacham Road	L	58	
Carter Terrace, 169 feet south from Summer Street	H	73	G
Cedar Street, 269 feet south from Broadway	L	50	
26 feet south from Murdock Street	L	53	
49 feet north from Clyde Street	L	51	G
82 feet south from Morrison Avenue	L	53	
11 feet north from Albion Street	L	50	
15 feet north from Highland Avenue	H	79	
21 feet south from Highland Avenue	H	79	
61 feet north from Hall Street	L	47	
97 feet north from Sartwell Avenue	L	44	
225 feet south from Sartwell Avenue	L	47	
Central Street, 48 feet south from Broadway	H	53	G
6 feet north from Forster Street	H	55	G
131 feet north from Vernon Street	H	72	G
5 feet north from Pembroke Street	L	36	
186 feet south from Vernon Street	H	68	G
4 feet north from Willloughby Sereet	L	43	
92 feet north from Highland Avenue	L	29	
9 feet south from Highland Avenue	H	65	G
6 feet north from Oxford Street	L	31	G
25 feet south from Avon Street	H	65	
14 feet south from Summer Street	H	65	
Century Street, 34 feet south from Edgar Court	L	41	G
Chandler Street, 207 feet north from Park Avenue	L	54	
14 feet south from Broadway	L	54	
Chapel Street, 14 feet east from Chandler Street	L	49	
Charles Street, 161 feet south from Washington Street	L	63	
Charnwood Road, 79 feet west from Hancock Street	L	49	
Cherry Street, 27 feet south from Highland Avenue	L	47	
61 feet north from Hall Street	L	44	G
254 feet north from Sartwell Avenue	L	42	
6 feet south from Sartwell Avenue	L	50	
Chester Street, 14 feet north from Chester Place	L	60	
Chestnut Street, 245 feet east from Poplar Street	L	62	
478 feet east from Poplar Street	L	62	

Chetwynd Road, 236 feet west from Curtis Street	H	65	
80 feet east from Hillsdale Road	H	74	
Church Street, 9 feet south from Summer Street	L	67	G
337 feet north from Somerville Avenue	L	59	
30 feet north from Somerville Avenue	L	60	
16 feet south from Somerville Avenue	L	61	
13 feet north from Lake Street	L	64	
Cinder Road, 25 feet north from Middlesex Avenue	L	63	G
21 feet south from Industry Road	L	63	G
22 feet west from Cinder Road	L	63	G
City Road, 30 feet south from City Road	L	42	
71 feet north from Cutler Street	L	43	G
Claremon Street, 253 feet south from Holland Street	H	83	G
Clarendon Avenue, 256 feet south from Broadway	H	72	
795 feet south from Broadway	H	82	
1198 feet south from Broadway	H	90	
Clark Street, 17 feet north from Newton Street	L	62	
199 feet north from Newton Street	L	64	
196 feet south from Lincoln Parkway	L	66	
Cleveland Street, 191 feet west from Central Street	L	46	
Clyde Street, 252 feet east from Cedar Street	L	51	G
Opp. Murdock Street	L	51	G
College Avenue, 11 feet north from Winter Street	L	57	G
5 feet south from Morrison Avenue	L	57	
9 feet south from Hall Avenue	L	55	
54 feet south from Francesca Avenue	L	50	
Opp. Kenwood Street	L	48	
103 feet south from Broadway	L	52	
403 feet north from Broadway	L	54	
719 feet north from Broadway	L	57	
College Hill Road, 180 feet north from Conwell Avenue	L	46	
Columbia Street, 2 feet south from Beech Avenue	L	63	
11 feet south from Columbia Court	L	64	
Columbus Avenue, 7 feet east from Walnut Street	H	85	G
35 feet west from Stone Avenue	H	86	
117 feet west from Bonner Avenue	H	83	
84 west from Columbus Avenue	H	88	G
6 feet north from Washington Street	H	98	
Concord Avenue, 6 feet south from Hammond Street	L	61	
22 feet east from Wyatt Street	L	63	
7 feet east from Marion Street	L	66	G
19 feet east from Springfield Street	L	64	G
310 feet east from Springfield Street	L	66	
85 feet east from Concord Square	L	66	
157 feet west from Prospect Street	L	66	
Congress Place, 25 feet north from Somerville Avenue	L	61	G
Conlon Court Extension, 143 feet west from Windsor Street	L	65	G
Connecticut Avenue, 70 feet south from Mystic Avenue	L	62	
Conwell Avenue, 21 feet west from Curtis Street	H	68	
193 feet east from Hillsdale Road	H	70	
28 feet west from Hillsdale Road	L	46	
115 feet east from College Hill Road	L	49	
9 feet east from North Street	L	56	
Conwell Street, 7 feet south from Highland Avenue	H	72	
4 feet north from Francis Street	H	60	
Cooney Street, 97 feet north from Line Street	L	55	G

Corinthian Road, 164 feet south from Broadway	L	56	G
Cottage Avenue, 116 feet east from Bowers Avenue	L	60	
Craigie Street, 125 feet north from Somerville Avenue	L	54	
80 feet south from Kimball Street	L	46	
230 feet north from Kimball Street	H	72	
217 feet south from Summer Street	H	64	
Crescent Street, 76 feet from angle of same street	L	52	
Crocker Street, 4 feet south from Highland Avenue	H	73	
7 feet north from Crown Street	H	52	
Cross Street, 37 feet south from Mystic Avenue	L	62	G
84 feet north from Pennsylvania Avenue	L	61	G
111 feet north from Broadway	L	57	
8 feet north from Otis Street	L	58	G
38 feet north from Allston Street	H	89	
Cross Street Place, 7 feet west from Cross Street	L	59	G
Cummings Street, 243 feet north from Mystic Avenue	L	64	G
28 feet south from Middlesex Avenue	L	65	G
Curtis Avenue, 205 feet west from Curtis Street	H	64	G
158 feet east from Hillsdale Road	H	70	
Curtis Street, 8 feet north from Broadway	H	80	G
3 feet south from Electric Avenue	H	75	
64 feet south from Powder House Boulevard	H	81	G
6 feet south from Raymond Avenue	H	68	
13 feet north from Curtis Avenue	H	60	
65 feet south from Sunset Road	H	64	G
Cutter Avenue, 11 feet south from Highland Avenue	L	55	
Cutter Street, 95 feet south from Broadway	L	57	
131 feet south from Bean Terrace	L	56	
Cypress Street, 113 feet west from Central Street	L	57	
Dana Street, 19 feet north from Pearl Street	L	57	G
24 feet south from Everett Avenue	L	55	G
25 feet north from Otis Street	L	55	G
Dane Avenue, 168 feet east from Dane Street	L	62	
162 feet west from Leland Street	L	65	
Dane Street, 166 feet south from Somerville Avenue	L	63	
8 feet south from Tyler Street	L	59	G
42 feet north from Skehan Street	L	60	
171 feet north from Washington Street	L	63	
Dartmouth Street, 171 feet north from Medford Street	H	86	
53 feet south from Evergreen Avenue	H	81	
200 feet north from Evergreen Avenue	H	80	
183 feet south from Broadway	H	79	G
Davis Square, 45 feet east from Day Street	H	99	
Day Street, 11 feet south from Elm Street	H	99	G
Opp. Herbert Street	L	60	G
193 feet south from Herbert Street	L	60	
4 feet north from Orchard Street	L	60	G
Dearborn Road, 34 feet east from College Avenue	H	86	
64 feet east from Bromfield Road	H	94	
Delaware Street, 161 feet east from Northern Artery	L	57	
8 feet south from Pearl Street	L	57	
Dell Street, 261 feet west from Glen Street	L	59	G
Derby Street, 398 feet east from Temple Street	L	59	
Dickinson Street, 11 feet north from Beacon Street	L	61	
7 feet north from Leon Street	L	60	
Dickson Street, 149 feet north from Broadway	H	76	

Dover Street, 22 feet south from Holland Street	H	97	
23 feet south from Meacham Road	L	59	
308 feet north from Orchard Street	L	60	
3 feet north from Orchard Street	L	58	
Durant Street, 36 feet south from Washington Street	L	62	
Durham Street, 6 feet west from Hanson Street	L	62	G
225 feet west from Hanson Street	L	61	
Earle Street, 218 feet north from South Street	L	63	
316 feet north from South Street	L	63	
Eastman Road, 280 feet south from Highland Avenue	H	59	G
Edgar Avenue, 38 feet south from Heath Street	H	69	
111 feet south from Jaques Street	L	40	
Edgar Court, 42 feet west from Edgar Avenue	L	41	G
Edgar Terrace, 6 feet east from Century Street	L	41	G
Edmund Street, 14 feet south from Broadway	L	62	
Edmonton Avenue, 30 feet east from Fellsway East	L	63	G
Electric Avenue, 169 feet east from Packard Avenue	H	83	G
159 feet west from Mason Street	H	81	
Eliot Street, 3 feet east from Park Street	L	60	
Ellsworth Street, 7 feet west from Rush Street	L	56	
Elm Street, 81 feet west from ChesterStreet	L	60	G
11 feet west from Grove Street	L	58	G
32 feet west from Russell Street	L	57	G
89 feet west from Windom Street	L	56	
8 feet west from Elston Street	L	55	G
18 feet east from St. James Avenue	L	56	
13 feet east from Burnside Avenue	L	55	
100 feet east from Hancock Street	L	55	
56 feet east from Holyoke Road	L	52	
10 feet west from Cedar Street	L	51	
26 feet east from Linden Avenue	L	54	
11 feet east from Mossland Street	L	50	
17 feet west from Porter Street	L	55	
Elmwood Street, 9 feet south from Holland Street	H	92	
128 feet north from Elmwood Terrace	H	100	
85 feet south from Harrison Street	H	99	
Emerson Street, 14 feet west from Newton Street	L	58	G
Endicott Avenue, 424 feet south from Broadway	H	86	G
Eustis Street, 7 feet south from Beacon Street	L	60	G
Everett Avenue, 295 feet east from Northern Artery	L	57	
5 feet west from Cross Street	L	58	
Everett Street, 15 feet east from Webster Avenue	L	59	
55 feet north from Emerson Street	L	64	
Evergreen Avenue, 114 feet east from Sycamore Street	H	75	
7 feet east frem School Street	L	47	
Fairfax Street, 79 feet west from North Street	L	48	G
439 feet west from North Street	L	57	G
135 feet east from Alewife Brook Parkway	L	60	G
Fairlee Street, 132 feet west from Cherry Street	L	47	
Fairmount Avenue, 25 feet west frcm Hill Street	H	70	G
Opp. Watson Street	H	74	
Farragut Avenue, 256 feet south from Broadway	H	86	G
534 feet south from Broadway	H	90	
13 feet north from Hooker Avenue	H	92	G
Fellsway West, 12 feet north from Broadway	L	59	
377 feet north from Jaques Street	L	63	G
Fenwick Street, 40 feet north from Broadway	H	68	

Fitchburg Street, 143 feet north from Linwood Street	L	60	G
Flint Avenue, 162 feet north from Flint Street	L	57	
Flint Street, 90 feet east from Northern Artery	L	58	G
17 feet west from Flint Avenue	L	57	
Flint Street, 14 feet west from Cross Street	L	55	G
59 feet east from Cross Street	L	55	
31 feet west from Franklin Street	L	55	
Florence Street, 205 feet south from Perkins Street	L	49	
8 feet south from Pearl Street	L	50	
454 feet north from Washington Street	L	59	G
Forster Street, Opp. Tennyson Street	H	59	
Fosket Street, 6 feet west from Bay State Avenue	L	43	
Fountain Avenue, 17 feet east from Cross Street	L	58	G
279 feet west from Glen Street	L	61	
Francesca Avenue, 305 feet east from College Avenue	L	47	
7 feet west from Liberty Avenue	L	48	
Franklin Avenue, 277 feet north from Washington Street	L	62	G
Franklin Street, 149 feet south from Broadway	L	58	
55 feet north from Perkins Street	L	52	
75 feet south from Webster Street	L	53	
155 feet south from Pearl Street	L	50	G
80 feet south from Oliver Street	L	61	
17 feet north from Hadley Court	L	60	G
25 feet north from Washington Street	L	60	
Fremont Street, 82 feet north from Main Street	H	67	
343 feet north from Main Street	H	69	G
11 feet south from Meacham Street	H	75	
280 feet north from Meacham Street	L	41	
24 feet north from East Albion Street	L	52	
Garden Court, 355 feet south from Somerville Avenue	L	63	
Garfield Avenue, 7 feet north from Broadway	L	62	
43 feet south from Blakeley Avenue	L	59	
24 feet south from Mystic Avenue	L	63	G
20 feet south from Middlesex Avenue	L	64	G
Garrison Avenue, 235 feet south from Broadway	H	87	G
549 feet south from Broadway	H	95	G
13 feet north from Hooker Avenue	H	99	G
Gibbens Street, 200 feet west from Central Street	H	69	
Gilman Street, 12 feet west from Cross Street	L	56	G
293 feet west from Cross Street	L	58	
180 feet east from Aldrich Street	L	58	G
9 feet west from Aldrich Street	L	58	
142 feet east from Jasper Street	L	57	
103 feet east from Walnut Street	L	55	
Glen Street, 14 feet north from Fountain Avenue	L	59	
2 feet north from Flint Street	L	51	
6 feet north from Webster Street	L	55	
7 feet north from Brook Street	L	58	
151 feet south from Broadway	L	57	
Glendale Avenue, 80 feet west from Cameron Avenue	H	96	
8 feet east from Yorktown Street	H	94	
Glenwood Road, 217 feet south from Broadway	H	61	
292 feet south from Medford Street	L	41	
317 feet north from Vernon Street	L	44	
11 feet north from Vernon Street	L	48	
Gordon Street, 241 feet west from North Street	L	50	G
101 feet east from Harold Street	L	54	G

362 feet east from Alewife Brook Parkway	L	59	G
97 feet east from Alewife Brook Parkway	L	64	G
Gorham Street, 310 feet south from Holland Street	L	61	
67 feet north from Howard Street	L	63	
Gov. Winthrop Road, 135 feet west from Fellsway	L	62	G
400 feet west from Fellsway	L	61	G
90 feet east from Temple Road	L	59	G
45 feet west from Temple Road	L	59	G
360 feet west from Temple Road	L	61	G
98 feet east from Shore Drive	L	63	G
Grand View Avenue, 255 feet west from Walnut Street	H	73	
Granite Street, Opp. Knapp Street	L	59	
Grant Street, 2 feet north from Derby Street	L	63	
100 feet south from Mystic Avenue	L	63	
Green Street, 295 feet south from Summer Street	H	83	
Greenville Street, 146 feet north from Boston Street	H	77	
32 feet north from Munroe Street	H	63	
Grove Street, 161 feet south from Highland Avenue	L	56	G
Hall Avenue, 8 feet west from Liberty Avenue	L	45	
312 feet west from Liberty Avenue	L	50	G
309 feet east from College Avenue	L	52	
Hall Street, 267 feet west from Cedar Street	L	45	
Hamilton Road, 80 feet east from Belknap Street	H	80	
Hamlet Street, 322 feet south from Highland Avenue	H	77	
Hammond Street, 31 feet west from Dickinson Street	L	61	
Hancock Street, 257 feet south from Summer Street	L	49	
Hanson Street, 7 feet south from Skehan Street	L	62	
9 feet south from Nevada Avenue	L	63	
14 feet south from Village Street	L	66	
Harold Street, 36 feet north from Dimick Street	L	58	G
Harrison Street, 4 feet east from Elmwood Street (Wd. 7)	H	98	
Harrison Street, 31 feet west from Ivaloo Street	L	60	G
Harrison Street, 78 feet east from Kent Street	L	63	
Harvard Street, 13 feet north from Atherton Street	H	84	G
23 feet north from Monmouth Street	H	72	
Hathorn Street, 144 feet south from Broadway	L	52	G
Hawkins Street, 50 feet north from Lake Street	L	65	
Hawthorne Street, 9 feet east from Cutter Avenue	L	57	
208 feet east from West Street	L	57	
Heath Street, 6 feet east from Moreland Street	H	68	
97 feet west from Bond Street	H	69	
3 feet east from Fenwick Street	H	70	
290 feet east from Fenwick Street	H	73	
4 feet west from Temple Street	H	83	
Herbert Street, 162 feet west from Chester Street	L	61	
High Street, 73 feet west from North Street	L	54	G
391 feet west from North Street	L	64	G
Highland Avenue, 64 feet east from College Avenue	L	59	G
217 feet west from Grove Street	L	59	G
36 feet east from Grove Street	H	90	G
6 feet west from Grove Street	L	58	G
35 feet west from West Street	L	54	G
59 feet east from West Street	H	92	G
2 feet west from Willow Avenue	L	51	G
42 feet east from Willow Avenue	H	85	G
5 feet west from Hancock Street	H	84	G
35 feet east from Hancock Street	L	46	G

63 feet east from Cherry Street	H	78	G
Opp. Eastman Road	H	70	G
4 feet east from Porter Street	H	72	G
6 feet east from Tower Street	H	70	G
27 feet west from Belmont Street	H	68	G
23 feet west from Spring Hill Terrace	H	68	G
214 feet east from Spring Hill Terrace	H	68	G
171 feet east from Central Street	H	64	G
112 feet east from Sycamore Street	H	57	G
250 feet east from Trull Lane	H	62	G
115 feet west from School Street	H	62	G
70 feet west from Prescott Street	H	63	G
46 feet west from Putnam Street	H	62	G
78 feet east from Vinal Avenue	H	64	G
261 feet west from Walnut Street	H	66	G
4 feet east from Walnut Street	H	65	G
29 feet west from Hamlet Street	H	75	G
Highland Road, 268 feet north from Morrison Avenue	L	52	G
83 feet south from Kidder Avenue	L	53	
178 feet north from Kidder Avenue	L	51	
240 feet south from Boston Avenue	L	49	
Hillsdale Road, 93 feet north from Curtis Avenue	H	74	
80 feet north from Chetwynd Road	H	76	
Hinckley Street, 106 feet south from Broadway	L	43	
8 feet south from Fiske Avenue	L	45	
12 feet south from Richardson Street	L	44	
Holden Green, 190 feet north from Holden Street, Cambridge	L	61	G
Holland Street, 26 feet west from Dover Street	H	94	G
209 feet south from Winter Street	L	58	G
138 feet east from Buena Vista Road	H	95	G
4 feet east from Paulina Street	H	95	G
92 feet east from Claremon Street	H	85	
Holyoke Road, 164 feet south from Elm Street	L	56	G
26 feet east from Holyoke Road	L	57	G
Homer Square, 200 feet west from Bonner Avenue	H	94	
Hooker Avenue, 24 feet west from Endicott Avenue	H	95	G
Houghton Street, 82 feet west from Prospect Street	L	66	
3 feet west from Bolton Street	L	65	
10 feet west from Oak Street	L	65	
Howard Street, 34 feet west from Thorndike Street	L	61	
Howe Street, 161 feet east from School Street	L	48	
Hudson Street, 24 feet east from Cedar Street	H	74	G
363 feet east from Cedar Street	H	79	
674 feet west from Lowell Street	H	79	
354 feet west from Lowell Street	H	78	
10 feet west from Lowell Street	H	78	
292 feet east from Lowell Street	H	77	
Opp. Benton Road	H	77	
13 feet east from Waldo Street	H	73	
Ibbetson Street, 255 feet north from Somerville Avenue	L	52	
5 feet south from Kimball Street	L	46	
Illinois Avenue, 221 feet north from Broadway	L	52	
Indiana Avenue, 178 feet north from Broadway	L	52	
Irving Street, 6 feet south from Broadway	L	55	
283 feet south from Broadway	L	51	G
535 feet north from Holland Street	L	57	
184 feet north from Holland Street	L	55	

Irvington Road, 103 feet east from Mystic Valley Parkway	L	63	G
39 feet west from Irvington Road	L	59	G
Jackson Road, 28 feet west from Walnut Street	L	49	
49 feet west from Bradley Street	L	53	
James Street, 111 feet north from Pearl Street	L	53	G
Jaques Street, 145 feet west from Bond Street	L	42	G
183 feet east from Fenwick Street	L	41	G
57 feet east from Florence Terrace	L	45	
358 feet east from Temple Street	L	55	
8 feet west from Grant Street	L	62	
9 feet west from Fellsway West	L	63	G
Jasper Street, 5 feet south from Virginia Street	L	57	
Jay Street, 14 feet south from Holland Street	L	59	G
84 feet north from Howard Street	L	64	
Joseph Street, 73 feet south from Lincoln Parkway	L	65	
Josephine Avenue, 364 feet south from Kidder Avenue	L	49	
88 feet south from Kidder Avenue	L	50	
129 feet north from Kidder Avenue	L	50	
424 feet north from Kidder Avenue	L	51	
212 feet south from Broadway	L	50	G
Joy Street, 34 feet south from Washington Street	L	62	G
499 feet south from Washington Street	L	58	G
320 feet north from Poplar Street	L	58	G
Kenneson Road, 121 feet south from Broadway	L	57	G
Kensington Avenue, 6 feet north from Broadway	L	63	
138 feet south from Blakeley Avenue	L	63	
95 feet north from Blakeley Avenue	L	63	G
38 feet north from Edmonton Avenue	L	64	G
38 feet south from Mystic Avenue	L	64	G
19 feet south from Middlesex Avenue	L	64	G
Kent Court, 207 feet west from Kent Street	L	63	
Kent Street, 28 feet south from Somerville Avenue	L	60	
7 feet north from Kent Court	L	64	
Kidder Avenue, 5 feet west from Powder House Terrace	L	46	
Kilby Street, 177 feet south from Somerville Avenue	L	64	G
Kingman Road, 282 feet south from Washington Street	L	64	
Kingston Street, 97 feet west from Thorndike Street	L	56	
Knowlton Streeet, Opp. Morton Street	L	56	
Lake Street, 4 feet east from Carlton Street	L	64	
218 feet west from Hawkins Street	L	65	G
Landers Street, 212 feet west from School Street	L	50	
Langmaid Avenue, 2 feet north from Broadway	H	82	
Laurel Street, 49 feet north from Green Street	H	80	G
8 feet north from Park Place	H	96	
Leland Street, 14 feet south from Dane Avenue	L	64	
Leonard Street, 46 feet north from Walker Street	L	59	
Lesley Avenue, 57 feet south from Highland Avenue	L	49	
Lewis Street, Opp. Rose Street	L	62	G
Lexington Avenue, 3 feet east from Henry Avenue	L	52	
2 feet west from Hancock Street	L	50	
199 feet east from Hancock Street	L	51	
244 feet west from Cedar Street	L	48	
Liberty Avenue, 4 feet north from Kidder Avenue	L	47	
101 feet south from Powder House Terrace	L	41	
13 feet north from Mallet Street	L	43	
13 feet south from Broadway	L	49	
Lincoln Avenue, Opp. George Street	L	52	

Lincoln Parkway, 153 feet west from Joseph Street	L	66	
420 feet west from Joseph Street	L	66	
Lincoln Street, 39 feet south from Broadway	L	52	G
Opp. Arlington Street	L	51	
Linden Avenue, 4 feet south from Cedar Avenue	H	73	G
75 feet south from Linden Place	H	81	
145 feet north from Gibson Terrace	H	81	
124 feet south from Gibson Terrace	H	88	
Linden Avenue, 4 feet south from Cedar Avenue	H	73	G
30 feet north from Charlestown Street	L	62	
Line Street, 100 feet west from Smith Street	L	61	
233 feet east from Smith Street	L	58	G
99 feet east from Cooney Street	L	55	
400 feet east from Cooney Street	L	56	
Linwood Street, 62 feet south from Washington Street	L	59	G
386 feet south from Washington Street	L	61	G
390 feet west from Poplar Street	L	62	G
211 feet west from Poplar Street	L	62	G
14 feet east from Poplar Street	L	63	G
48 feet west from Congress Place	L	62	G
126 feet west from London Street	L	64	G
53 feet east from London Street	L	62	G
London Street, 350 feet north from Linwood Street	L	62	G
Loring Street, 139 feet south from Osgood Street	L	57	
Lovell Street, 40 feet south from Electric Avenue	H	82	
Lowden Avenue, 27 feet south from Kidder Avenue	L	49	
171 feet north from Kidder Avenue	L	50	G
8 feet south from Mallet Street	L	51	
84 feet south from Broadway	L	52	G
Lowell Street, 1 foot north from Fiske Avenue	L	40	
50 feet north from Richardson Street	L	43	
181 feet south from Richardson Street	L	44	
124 feet south from Wilton Street	L	47	
9 feet north from Albion Street	L	50	
80 feet south from Albion Street	H	80	
162 feet south from Highland Avenue	H	54	
52 feet north from Crown Street	H	50	G
46 feet south from Silvey Place	H	66	
16 feet north from Kimball Street	H	79	
227 feet south from Kimball Street	H	84	
Madison Street, 43 feet east from Sycamore Street	H	65	
426 feet east from Sycamore Street	H	70	G
103 feet west from School Street	H	73	
Magnus Avenue, 195 feet south from Washington Street	L	64	
78 feet south from Lewis Street	L	59	
Main Street, 109 feet west from Edgar Avenue	H	53	
6 feet west from Moreland Street	H	60	G
109 feet west from Fremont Street	H	69	G
Maine Avenue, 65 feet south from Mystic Avenue	L	59	
84 feet north from Pennsylvania Avenue	L	54	
Malloy Court, 16 feet south from Somerville Avenue	L	60	
Malvern Avenue, 145 feet west from Cameron Avenue	H	98	
7 feet east from Yorktown Street	H	98	
Mansfield Street, 189 feet south from Washington Street	L	59	
191 feet north from Somerville Avenue	L	62	
Maple Avenue, 294 feet east from School Street	L	50	G

Maple Street, 14 feet west from Poplar Street	L	64	
8 feet south from Maple Street	L	64	
Marion Street, 50 feet east from Dimick Street	L	55	G
76 feet east from Harold Street	L	62	G
73 feet east from Wyatt Street	L	66	
32 feet south from Adrian Street	L	66	G
Marshall Street, 103 feet north from Pearl Street	L	52	
22 feet north from Stickney Avenue	L	53	G
Opp. Howe Street	L	54	
105 feet south from Mortimer Place	L	52	
5 feet north from Evergreen Avenue	L	53	G
108 feet north from Oakland Avenue	L	52	
Mason Street, 70 feet north from Broadway	H	95	
Meacham Road, 24 feet south from Meacham Road	L	60	
45 feet north from Kingston Street	L	58	
3 feet north from Orchard Street	L	56	
Meacham Street, 14 feet west from Moreland Street	L	41	
6 feet east from Ash Avenue	L	42	G
Mead Street, 48 feet east from Claremon Street	H	85	G
Medford Street, 53 feet west from Lowell Street	L	38	G
14 feet east from Glenwood Road	L	33	G
15 feet east from Bartlett Street	L	30	G
7 feet west from Central Street	L	34	G
25 feet west from Sycamore Street	H	80	G
15 feet east from Lee Street	H	81	
37 feet east from Thurston Street	H	83	G
2 feet west from School Street	H	86	G
296 feet east from School Street	L	49	G
6 feet west from Marshall Street	H	87	G
264 feet west from Walnut Street	H	78	
4 feet east from Walnut Street	H	77	
289 feet east from Walnut Street	H	74	G
284 feet west from Greenville Street	H	78	G
14 feet east from Greenville Street	H	82	G
13 feet west from Prospect Hill Avenue	H	85	G
238 feet east from Prospect Hill Avenue	H	89	G
45 feet south from Washington Street	L	59	G
219 feet south from Washington Street	L	60	G
297 feet north from Maple Street	L	61	G
76 feet north from Maple Street	L	60	G
28 feet north from Maple Street	L	62	G
118 feet north from Somerville Avenue	L	62	G
25 feet north from Somerville Avenue	L	61	G
27 feet south from Somerville Avenue	H	101	G
157 feet south from Somerville Avenue	H	102	G
171 feet south from Somerville Avenue	L	61	G
Opp Ward Street	L	61	G
91 feet south from Ward Street	L	61	
19 feet north from South Street	L	60	G
42 feet south from South Street	L	62	
19 feet south from Warren Street	L	62	
172 feet south from Warren Street	L	63	G
Merriam Street, 157 feet south from Washington Street	L	59	G
193 feet south from Somerville Avenue	L	62	G
24 feet north from Charlestown Street	L	63	
Michigan Avenue, 220 feet south from Pennsylvania Avenue	L	54	

Middlesex Avenue, 98 feet north from Mystic Avenue	L	64	G
189 feet east from Fellsway	L	65	G
241 feet west from Cummings Street	L	65	G
Miller Street, 20 feet east from Miller Street	L	60	G
Miner Street, 137 feet north from Vernon Street	L	40	
Minnesota Avenue, 225 feet south from Pennsylvania Ave.	L	57	
Mondamin Court, on south line of Harrison Street	L	62	
Monmouth Street, 7 feet west from Central Street	H	78	
155 feet east from Harvard Street	H	72	
Montrose Street, 9 feet east from Sycamore Street	H	80	
287 feet east from Sycamore Street	H	83	
259 feet west from School Street	H	82	
Moore Street, 23 feet south from Holland Street	H	78	
334 feet south from Holland Street	H	82	
21 feet north from Mead Street	H	84	
Moreland Street, 204 feet south from East Albion Street	L	46	
3 feet south from East Albion Street	L	49	
Morgan Street, 266 feet north from Beacon Street	L	59	
Morrison Avenue, 30 feet west from Grove Street	L	57	
46 feet west from Liberty Road	L	57	
13 feet west from Newberne Street	L	55	
38 feet west from Highland Road	L	53	
41 feet east from Pearson Avenue	L	53	
12 feet east from Boston Avenue	L	53	
Mossland Street, 113 feet north from Somerville Avenue	L	51	
Mt. Vernon Street, 5 feet south from Broadway	L	53	
11 feet south from Lincoln Avenue	L	51	
6 feet south from Perkins Street	L	48	
8 feet north from Pearl Street	L	47	
242 feet north from Washington Street	L	58	
Mt. Pleasant Street, 138 feet south from Broadway	L	54	
156 feet north from Perkins Street	L	51	G
Munroe Street, 241 feet east from Prospect Hill Avenue	H	63	
7 feet west from Bigelow Street	H	62	
203 feet east from Walnut Street	H	61	
Murdock Street, 204 feet east from Cedar Street	L	55	
604 feet east from Cedar Street	L	52	
Museum Street, 173 feet south from Beacon Street	L	63	
Myrtle Street, 216 feet north from Washington Street	L	59	
461 feet north from Washington Street	L	59	G
74 feet south from Pearl Street	L	50	
205 feet south from Perkins Street	L	51	
Mystic Avenue, 125 feet west from Fremont Street	L	62	G
6 feet west from Moreland Street	L	62	G
243 feet east from Moreland Street	L	62	G
547 feet east from Moreland Street	L	61	G
521 feet west from Shore Drive	L	61	G
228 feet west from Shore Drive	L	63	G
31 feet east from Shore Drive	L	63	G
37 feet west from Temple Street	L	62	G
115 feet east from Austin Street	L	59	
135 feet east from Mystic Street	L	56	
5 feet west from Union Street	L	53	G
88 feet east from Union Street	L	54	G
Mystic Street, 147 feet north from Benedict Street	L	44	
Mystic Valley Parkway, 95 feet south from Irvington Road	L	65	G
Nashua Street, 189 feet south from Wilton Street	L	52	

Newberne Street, 62 feet south from Morrison Avenue	L	58	
Newbury Street, 14 feet south from Holland Street	H	74	
261 feet south from Holland Street	H	76	
554 feet south from Holland Street	H	77	G
772 feet south from Holland Street	H	87	
1041 feet south from Holland Street	H	92	
New Hampshire Avenue, 78 feet north from Pennsylvania Avenue	L	57	
74 feet south from Mystic Avenue	L	60	
Newton Street, 380 feet east from Springfield Street	L	65	G
9 feet west from Joseph Street	L	66	G
Norfolk Street, 33 feet west from Webster Avenue	L	67	
229 feet west from Webster Avenue	L	67	
North Street, 17 feet north from Broadway	H	87	
Opp. Hamilton Road	H	89	
35 feet south from College Hill Road	L	50	G
61 feet north from Sterling Street	L	48	G
81 feet south from Gordon Street	L	45	G
Northern Artery, 12 feet north from Bonair Street	L	56	G
34 feet north from Mystic Avenue	L	63	G
283 feet south from Middlesex Avenue	L	64	G
54 feet south from Middlesex Avenue	L	64	G
North Union Street, 320 feet north from Mystic Avenue	L	60	G
Oak Street, 9 feet west from Prospect Street	L	66	
317 feet north from Houghton Street	L	67	
Oakland Avenue, 109 feet west from Marshall Street	L	51	
Oliver Street, 189 feet east from Cross Street	L	58	
15 feet east from Glen Street	L	60	
7 feet west from Franklin Street	L	60	
Orchard Street, 8 feet east from Chester Street	L	58	
On west line of Milton Street	L	59	G
8 feet west from Russell Street	L	59	
Osgood Street, 39 feet east from Granite Street	L	56	G
Opp Loring Street	L	53	
Ossipee Road, 177 feet east from Curtis Street	H	81	
139 feet west from Packard Avenue	H	85	
148 feet east from Packard Avenue	H	82	
42 feet west from Mason Street	H	81	
Otis Street, 13 feet west from Cross Street	L	58	G
306 feet east from Northern Artery	L	58	
7 feet east from Wigglesworth Street	L	52	
Oxford Street, 280 feet west from School Street	H	68	G
45 feet east from Trull Lane	H	62	
238 feet west from Hersey Street	H	67	
Packard Avenue, 13 feet north from Whitman Street	H	86	
35 feet north from Electric Avenue	H	84	
39 feet south from Powder House Boulevard	H	84	
Park Avenue, 83 feet west from College Avenue	L	57	
10 feet west from Chandler Street	L	58	
Park Street, 69 feet south from Somerville Avenue	L	61	
416 feet south from Somerville Avenue	L	65	
99 feet south from Morgan Street	L	58	
Parkdale Street, 122 feet south from Washington Street	L	63	G
55 feet north from Lewis Street	L	63	G
Partridge Avenue, 1 foot south from Broadway	H	60	
25 feet north from Medford Street	H	73	
119 feet south from Medford Street	L	38	
421 feet south from Medford Street	L	43	
275 feet north from Vernon Street	L	46	

Paulina Street, 182 feet north from Holland Street	H	96	
286 feet south from Broadway	H	98	
6 feet south from Broadway	H	95	
Pearl Street, 105 feet east from Marshall Street	L	52	G
34 feet east from Skilton Avenue	L	52	G
6 feet west from Walnut Street	L	52	G
1 foot east from Pearl Terrace	L	55	G
60 feet east from Cross Street	L	53	
15 feet west from Glen Street	L	51	
Opp. Hillside Avenue	L	49	G
28 feet east from Franklin Street	L	49	
7 feet east from Pinckney Street	L	48	
52 feet west from Crescent Street	L	47	
Pearl Street Place, 167 feet north from Pearl Street	L	57	
Pearson Avenue, 308 feet north from Morrison Avenue	L	53	
45 feet south from Kidder Avenue	L	55	
300 feet south from Boston Avenue	L	50	G
Pearson Road, 135 feet north from Broadway	L	50	
81 feet north from Warner Street	L	55	G
747 feet south from Dearborn Road	L	57	
435 feet south from Dearborn Road	L	57	
132 feet south from Dearborn Road	L	55	
Pembroke Street, 15 feet east from Tennyson Street	L	36	
Pennsylvania Avenue, 258 feet north from Broadway	L	50	
36 feet west from New Hampshire Avenue	L	53	
50 feet west from Minnesota Avenue	L	57	G
Perkins Street, Opp. Myrtle Street	L	50	
Opp. Lincoln Street	L	50	
24 feet east from Pinckney Street	L	48	G
141 feet west from Mt. Vernon Street	L	48	
19 feet east from Mt. Pleasant Street	L	52	
Perry Street, 323 feet south from Washington Street	L	65	
Pinckney Place, 125 feet east from Pinckney Street	L	50	
Pinckney Street, Opp. Wheeler Street	L	49	
71 feet south from Pearl Street	L	48	
107 feet south from Pinckney Place	L	56	G
11 feet north from Washington Street	L	62	
Pitman Street, 179 feet west from Beech Street	L	57	
Pleasant Avenue, 257 feet west from Walnut Street	H	68	G
Poplar Street, 22 feet north from Linwood Street	L	62	G
Opp. Chestnut Street	L	62	G
Porter Street, 2 feet north from Mountain Avenue	H	54	G
281 feet south from Summer Street	H	69	
23 feet north from Williams Court	H	83	
7 feet north from Parker Place	H	92	
Powder House Boulevard, 177 feet west from Broadway	L	56	
406 feet east from Leonard Street	L	59	
48 feet east from Leonard Street	L	58	
10 feet west from Mason Street	L	52	G
317 feet east from Packard Avenue	H	88	
183 feet west from Packard Avenue	H	83	G
170 feet east from Curtis Street	L	46	
193 feet west from Curtis Street	L	42	
33 feet east from Dow Street	H	84	
159 feet west from Dow Street	L	48	
335 feet east from North Street	H	90	
50 feet east from North Street	L	54	

Prescott Street, 329 feet south from Highland Avenue	H	75	
586 feet south from Highland Avenue	H	79	
256 feet north from Summer Street	H	85	
Preston Road, 165 feet south from Summer Street	H	80	
269 feet west from School Street	H	83	
Prichard Avenue, 255 feet north from Morrison Avenue	L	54	
46 feet north from Kidder Avenue	L	52	G
165 feet south from Boston Avenue	L	50	
Princeton Street, 186 feet west from Lowell Street	L	50	G
Professors Row, 122 feet west from College Avenue	H	80	
280 feet west from College Avenue	H	79	
61 feet east from Latin Way	H	70	
156 feet east from Packard Avenue	H	62	
5 feet west from Packard Avenue	H	64	
296 feet west from Packard Avenue	H	65	G
113 feet east from Curtis Street	H	62	
Prospect Hill Avenue, 8 feet north from Munroe Street	H	64	
Prospect Street, 120 feet north from Bennett Street	L	64	G
45 feet west from Webster Avenue	L	63	
156 feet south from Oak Street	L	65	G
284 feet north from Houghton Street	L	65	
72 feet north from Houghton Street	L	66	
Puritan Road, 149 feet west from Ten Hills Road	L	57	G
135 feet east from Temple Road	L	52	G
45 feet west from Temple Road	L	50	G
360 feet west from Temple Road	L	54	G
44 feet east from Shore Drive	L	60	G
Putnam Road, 253 feet west from Ten Hills Road	L	46	G
45 feet west from Temple Road	L	44	G
315 feet west from Temple Road	L	48	G
132 feet east from Shore Drive	L	51	G
Putnam Street, 117 feet south from Highland Avenue	H	62	
420 feet south from Highland Avenue	H	71	
609 feet north from Summer Street	H	77	G
307 feet north from Summer Street	H	89	
48 feet north from Summer Street	H	90	
Quincy Street, 28 feet south from Summer Street	L	53	
379 feet north from Somerville Avenue	L	56	
90 feet north from Somerville Avenue	L	57	
Radcliffe Road, 1 foot west from James Street	L	46	
Raymond Avenue, 249 feet west from Curtis Street	H	75	G
566 feet east from North Street	H	84	G
248 feet east from North Street	L	51	G
Rhode Island Avenue, 63 feet south from Mystic Avenue	L	61	
81 feet north from Pennsylvania Avenue	L	57	
Richardson Street, 9 feet west from Nashua Street	L	45	
Richdale Avenue, Opp. Thurston Street	L	49	
Robinson Street, 318 feet east from Bartlett Street	L	38	
Rogers Avenue, 255 feet north from Morrison Avenue	L	49	
88 feet south from Kidder Avenue	L	49	G
259 feet north from Kidder Avenue	L	50	
343 feet south from Boston Avenue	L	51	
Rose Street, 213 feet north from Lewis Street	L	63	G
Rossmore Street, 244 feet south from Washington Street	L	58	
Rush Street, 128 feet north from Brook Street	L	60	
11 feet north from Pearl Street	L	55	
83 feet south from Pearl Street	L	53	

Russell Road, 11 feet north from Broadway	H	80	
105 feet south from Ware Street	H	75	
Sacramento Street, 7 feet south from Miller Street	L	60	
128 feet south from Beacon Street	L	63	
Sanborn Avenue, 55 feet east from Walnut Street	H	99	G
Sanborn Court, 172 feet north from Washington Street	H	95	G
Sargent Avenue, 93 feet west from Walnut Street	L	49	
172 feet east from Sargent Avenue	L	49	
50 feet north from Sargent Avenue	L	52	
Sawyer Avenue, 27 feet west from Packard Avenue	H	66	
School Street, 31 feet south from Oakland Avenue	H	89	G
99 feet south from Maple Avenue	L	49	
6 feet south from Montrose Street	H	77	G
129 feet north from Highland Avenue	H	66	
87 feet north from Oxford Street	H	65	
15 feet north from Avon Street	H	81	
101 feet south from Sumner Street	H	88	
93 feet south from Preston Road	H	87	
61 feet north from Knapp Street	L	57	
Sewall Street, 11 feet east from Sewall Court	L	57	
Shawmut Street, 9 feet north from Washington Street	L	57	
150 feet north from Allston Street	L	51	G
Shore Drive, 108 feet north from Mystic Avenue	L	63	G
93 feet north from Gov. Winthrop Road	L	63	G
Silvey Place, 100 feet west from Lowell Street	H	66	G
Simpson Avenue, 138 feet north from Holland Street	L	56	
270 feet south from Broadway	L	59	
Skilton Avenue, 20 feet west from Skilton Avenue	L	52	
Skehan Street, 109 feet east from Hanson Street	L	63	
Somerville Avenue, 94 feet west from Acadia Park	L	54	G
117 feet east from Acadia Park	L	54	G
114 feet east from Adelaide Road	L	53	G
118 feet west from Oak Square	L	56	G
60 feet west from Craigie Street	L	55	G
8 feet east from Ibbetson Street	L	58	G
77 feet west from Belmont Street	L	59	G
132 feet west from Kent Street	L	60	G
70 feet east from Spring Street	L	59	G
14 feet west from Beech Street	L	60	G
10 feet east from Central Street	L	59	G
14 feet west from Laurel Street	L	59	G
16 feet west from Loring Street	L	58	
86 feet west from Granite Street	H	60	G
111 feet east from Granite Street	L	59	G
93 feet east from School Street	L	60	G
40 feet west from Kilby Street	L	61	G
184 feet west from Hawkins Street	L	61	G
76 feet east from Hawkins Street	L	60	G
203 feet east from Stone Avenue	L	62	G
90 feet west from Prospect Street	L	62	G
8 feet east from Merriam Street	L	63	
29 feet west from Linden Street	L	63	
168 feet west from Poplar Street	L	63	G
12 feet east from Poplar Street	L	64	G
145 feet west from Congress Place	L	64	G
313 feet east from Congress Place	L	53	G
On lower level 3 feet east from easterly abutment of bridge	L	60	

On upper level 78 feet east from easterly abutment of bridge	L	50	G
On upper level 280 feet east from easterly abutment of bridge	L	56	G
312 feet west from Cambridge-Somerville line	L	60	G
117 feet west from Cambridge-Somerville line	L	60	G
99 feet west from Cambridge-Somerville line	L	60	G
South Street, 95 feet west from Bedford Street	L	62	
25 feet west from Hunting Street	L	62	
2 feet east from Harding Street	L	62	
1 foot west from Water Street	L	63	G
Spencer Avenue, 63 feet east from Hancock Street	L	50	
278 feet west from Cedar Street	L	45	
Springfield Street, 140 feet south from Concord Avenue	L	63	
22 feet south from Dickinson Street	L	62	G
177 feet south from Houghton Street	L	64	G
Spring Hill Terrace, 331 feet south from Highland Avenue	H	63	
Spring Street, 184 feet north from Atherton Street	H	74	
11 feet south from Pitman Street	L	58	
Sterling Street, 11 feet west from North Street	L	49	G
414 feet east from Alewife Brook Parkway	L	61	G
27 feet east from Alewife Brook Parkway	L	66	G
Stickney Avenue, 209 feet west from Marshall Street	L	52	
Stone Avenue, 120 feet north from Washington Street	H	99	G
99 feet north from Stone Place	H	98	G
Summer Street, 96 feet west from Cutter Avenue	L	58	G
107 feet west from Windom Street	L	57	
Opp. Elston Street	L	56	G
36 feet east from Banks Street	L	54	
8 feet west from Hancock Street	L	49	G
7 feet east from Cherry Street	L	43	
5 feet east from Cedar Street	H	80	G
25 feet east from Linden Avenue	H	76	
34 feet east from Porter Street	H	55	
Opp. Craigie Street	H	59	
4 feet west from Lowell Street	H	57	
5 feet east from Belmont Street	H	56	
1 foot west from Spring Street	H	56	
33 feet west from Benton Road	H	57	G
236 feet east from Benton Road	H	64	G
58 feet east from Central Street	H	65	G
19 feet west from Laurel Street	H	72	G
51 feet west from Preston Road	H	73	G
190 feet west from School Street	H	86	G
8 feet east from School Street	H	87	G
Summit Avenue, 231 feet east from Vinal Avenue	H	69	
Sunnyside Avenue, 107 feet west from Wigglesworth Street	L	47	
Sunset Road, 239 feet west from Curtis Street	H	70	
119 feet east from Hillsdale Road	H	73	
Sycamore Street, 18 feet south from Broadway	H	60	G
61 feet south from Browning Road	H	65	
2 feet south from Forster Street	H	66	
199 feet north from Medford Street	H	75	
119 feet north from Pembroke Street	L	40	
Sydney Street, Opp. Taylor Street	L	63	
Talbot Avenue, 4 feet west from College Avenue	H	93	G
482 feet west from College Avenue	H	90	G
On east line of Latin Way	H	78	

Taylor Street, 15 feet south from Mystic Avenue	L	62	
Teele Avenue, 173 feet west from Packard Avenue	H	80	
200 feet east from Curtis Street	H	78	
Temple Road, 23 feet north from Mystic Avenue	L	60	G
10 feet south from Shore Drive	L	62	G
Temple Street, 5 feet north from Broadway	H	87	
123 feet south from Sewall Street	L	51	
11 feet north from Jaques Street	L	50	
10 feet south from Derby Street	L	53	
6 feet south from Sydney Street	L	60	
Ten Hills Road, (at angle of street)	L	52	G
45 feet east from Temple Road	L	51	G
225 feet west from Temple Road	L	53	G
119 feet east from Shore Drive	L	58	G
Tenny Court, 306 feet north from Mystic Avenue	L	59	
Tennyson Street, 4 feet south from Medford Street	L	38	
117 feet north from Pembroke Street	L	39	
Thorndike Street, 4 feet south from Holland Street	L	58	
31 feet north from Kingston Street	L	56	
Thorpe Street, 269 feet south from Highland Avenue	H	77	
Thurston Street, 185 feet north from Medford Street	H	86	
177 feet south from Evergreen Avenue	H	81	
7 feet north from Evergreen Avenue	H	78	
347 feet north from Evergreen Avenue	H	80	
Tower Street, 17 feet north from Crown Street	H	52	
Tremont Street, 12 feet west from Webster Avenue	L	68	G
458 feet west from Webster Avenue	L	67	
Trull Street, 3 feet south from Medford Street	L	36	
276 feet south from Medford Street	L	41	
520 feet north from Vernon Street	L	44	
270 feet north from Vernon Street	L	44	G
Tufts Street, 47 feet east from Cross Street	L	54	
53 feet east from Dell Street	L	56	G
44 feet west from Glen Street	L	57	G
150 feet east from Glen Street	L	58	G
50 feet north from Washington Street	L	59	G
Tyler Street, 31 feet east from Vine Street	L	63	
Union Square, 64 feet west from Stone Avenue	H	99	G
4 feet south from Bow Street	H	99	G
Union Street, 2 feet north from Broadway	L	53	
Opp. Benedict Street	L	48	
Upland Road, 308 feet west from Curtis Street	H	67	G
89 feet east from Hillsdale Road	H	73	G
Vermont Avenue, 200 feet north from Pennsylvania Avenue	L	59	
Vernon Street, 72 feet west from Partridge Avenue	L	48	
1 foot east from Bartlett Street	L	44	
2 feet east from Miner Street	L	39	
48 feet west from Central Street	L	37	G
Victoria Street, 256 feet south from Broadway	H	90	G
501 feet south from Broadway	H	94	
150 feet north from Woodstock Street	H	95	
Villa Avenue, 181 feet south from Winslow Avenue	L	60	G
Vinal Avenue, 5 feet south from Highland Avenue	H	64	
9 feet north from Pleasant Avenue	H	71	
123 feet south from Summit Avenue	H	77	
204 feet north from Summer Street	H	94	
16 feet north from Summer Street	H	95	

Vine Street, 32 feet south from Somerville Avenue	L	61	
121 feet south from Tyler Street	L	66	
Opp. Elliott Street	L	64	
14 feet north from Beacon Street	L	64	
Virginia Street, 45 feet west from Aldrich Street	L	57	
Waldo Street, 6 feet north from Highland Avenue	H	67	
Walker Street, 140 feet north from Broadway	L	56	
213 feet east from Leonard Street	L	58	
Wallace Street, 40 feet south from Broadway	L	54	
394 feet south from Broadway	L	50	
694 feet south from Broadway	L	54	
165 feet north from Park Avenue	L	58	
11 feet north from Holland Street	L	57	
Walnut Road, 268 feet west from Walnut Street	L	52	
Walnut Street, 11 feet south from Boston Street	H	65	
31 feet north from Pleasant Avenue	H	69	
114 feet south from Pearl Street	L	52	G
Opp. Radcliffe Road	L	48	G
39 feet south from Walnut Road	L	53	
Walter Terrace, 112 feet south from Jackson Road	L	52	G
Ward Street, 116 feet west from Medford Street	L	60	
7 feet east from Harding Street	L	61	
Ware Street, 260 feet west from Curtis Street	H	70	
43 feet west from Dow Street	H	74	
Warner Street, 67 feet north from Broadway	L	54	
Warren Avenue, 48 feet north from Bow Street	H	91	
6 feet north from Sanborn Avenue	H	95	
6 feet south from Columbus Avenue	H	83	
Warwick Street, 332 feet west from Warwick Street	L	49	
110 feet south from Clyde Street	L	49	G
Washington Street, 63 feet east from Line Street	L	62	
45 feet east from Beacon Street	L	62	
132 feet east from Hanson Street	L	64	
13 feet west from Magnus Avenue	L	63	G
7 feet east from Leland Street	L	62	G
Opp. Perry Street	L	62	G
49 feet east from Bowdoin Street	L	65	G
243 feet east from Parker Street	L	62	G
6 feet west from Hawkins Street	L	60	G
5 feet east from Kingman Road	L	61	G
15 feet east from Stone Avenue	H	101	G
6 feet east from Sanborn Court	H	101	G
1 foot west from Columbus Avenue	L	58	G
6 feet west from Washington Terrace	L	58	G
38 feet east from Rossmore Street	L	57	G
30 feet west from Boston Street	H	93	G
79 feet east from Boston Street	L	56	G
50 feet east from Shawmut Street	L	59	G
59 feet west from Franklin Street	L	61	G
151 feet west from Franklin Avenue	L	62	G
18 feet east from Franklin Avenue	L	64	G
27 feet east from Durant Street	L	63	G
15 feet west from Myrtle Street	L	64	G
6 feet west from Florence Street	L	65	G
3 feet west from Murray Street	L	64	G
On west corner of Mt. Vernon Street	L	64	G

4 feet west from Waverly Street	L	64	G
69 feet west from Crescent Street	L	61	G
Washington Terrace, 5 feet east from Washington Terrace	L	44	G
Water Street, 340 feet north from South Street	L	63	
252 feet north from South Street	L	66	
90 feet north from South Street	L	63	
Waterhouse Street, 24 feet south from Broadway	H	89	
323 feet south from Broadway	H	91	
241 feet north from Woodstock Street	H	96	
Waverly Street, 171 feet south from Washington Street	L	65	
Webster Avenue, 35 feet south from Washington Street	L	61	G
82 feet north from Newton Street	L	59	G
140 feet north from Prospect Street	L	59	G
19 feet south from Prospect Street	L	62	G
76 feet north from Tremont Street	L	65	G
On north line of Beach Avenue	L	68	G
8 feet south from Columbia Court	L	68	G
Webster Street, 25 feet east from Cross Street	L	56	G
10 feet east from Rush Street	L	57	
Opp. Cutter Street	L	52	
Wellington Avenue, 15 feet west from Montgomery Avenue	L	60	
Wesley Park, 17 feet north from Summer Street	H	98	
331 feet north from Summer Street	H	96	
Wesley Street, 200 feet north from Pearl Street	L	56	
West Street, 92 feet south from Highland Avenue	L	58	
69 feet north from Highland Avenue	L	58	G
West Adams Street, 200 feet north from Conwell Avenue	L	46	
Opp. Bailey Street	L	43	
Westminster Street, 156 feet south from Electric Avenue	H	75	
Weston Avenue, 194 feet south from Broadway	H	80	G
297 feet south from Broadway	H	80	G
West Quincy Street, 88 feet north from Bailey Street	L	44	G
Westwood Road, 91 feet west from Central Street	H	67	
58 feet east from Benton Road	H	60	
Wheatland Street, 127 feet north from Broadway	L	61	
9 feet south from Jaques Street	L	62	
73 feet north from Derby Street	L	63	
78 feet south from Mystic Avenue	L	63	G
Whipple Street, 100 feet north from Highland Avenue	L	55	
Whitfield Road, 86 feet west from Packard Avenue	H	75	
321 feet east from Curtis Street	H	72	G
82 feet east from Curtis Street	H	73	G
Whitman Street, 170 feet west from Mason Street	H	93	
211 feet east from Packard Avenue	H	90	
Wigglesworth Street, 14 feet north from Pearl Street	L	56	
William Street, 31 feet west from College Avenue	L	50	G
8 feet east from Chandler Street	L	44	G
Willoughby Street, 147 feet west from Sycamore Street	H	81	
Willow Avenue, 280 feet south from Summer Street	L	54	G
17 feet north from Summer Street	L	53	
3 feet north from Lexington Avenue	L	55	
38 feet south from Morrison Avenue	L	52	
46 feet south from Fosket Street	L	48	
84 feet south from Kidder Avenue	L	50	
171 feet north from Kidder Avenue	L	50	
On south line of Mallet Street	L	50	

Wilson Avenue, 306 feet south from Broadway	L	50	
Wilton Street, 8 feet east from Henderson Street	L	45	
7 feet east from Nashua Street	L	44	G
9 feet east from Hinckley Street	L	47	
Windom Street, 6 feet south from Summer Street	L	56	
Windsor Road, 45 feet west from Hancock Street	L	47	
84 feet east from Willow Avenue	L	52	
Windsor Street, 30 feet south from Glass House Court	L	64	G
224 feet south from Glass House Court	L	63	G
35 feet north from the Somerville-Cambridge Line	L	63	G
Winslow Avenue, 144 feet east from College Avenue	L	57	
5 feet west from Grove Street	L	58	
222 feet east from Grove Street	L	56	
10 feet west from Clifton Street	L	56	
Winter Street, 134 feet north from Holland Street	L	57	
Wisconsin Avenue, 210 feet south from Pennsylvania Avenue	L	54	
Woodbine Street, 222 feet west from Centre Street	L	48	
Woods Avenue, 180 feet west from North Street	L	50	G
496 feet west from North Street	L	55	G
318 feet east from Alewife Brook Parkway	L	60	G
65 feet east from Alewife Brook Parkway	L	65	G
Woodstock Street, 6 feet west from Victoria Street	H	97	
Wyatt Street, 8 feet north from Taunton Street	L	65	

FIRE HYDRANTS ON PUBLIC PROPERTY

Dilboy Field	1	L. S.	1 G.
Foss Park	2	L. S.	1 G.
High School Grounds	2	H. S.	2 G.
Highway Department Yard	1	L. S.	1 G.
Sanitary Department	1	L. S.	1 G.
Water Department Yard	1	H. S.	1 G.

FIRE HYDRANTS ON PRIVATE PROPERTY

American Tube Works	2	L. S.
Boston Elevated Ry. Co. (Car Barns)	6	H. S.
Boston & Maine Railroad Co.	24	L. S.
Carlisle Ayer Co.	1	L. S.
M. W. Carr Co.	1	H. S.
Edison Electric Light Co.	1	L. S.
Ford Motor Co.	11	L. S.
Fresh Pond Ice Co.	1	L. S.
Middlesex Bleachery	3	L. S.
New England Dressed Meat & Wool Co.	4	L. S. & 4 H. S.
North Packing Co.	9	H. S. & 1 L. S.
John P. Squire Co.	12	H. S. & 2 L. S.
Tufts College	1	H. S.
Union Glass Works	1	L. S.
Vacuum Co.	3	L. S.
	80	

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Annual Report
of the
Water Commissioner
of the
City of Somerville
Massachusetts
1929

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ANNUAL REPORT

OF THE

Water Commissioner

OF THE

CITY OF SOMERVILLE

Compliments of

THOMAS A. KELLEY,

Water Commissioner.

SOMERVILLE PRINTING CO.
1930

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX CO., MASSACHUSETTS

Settled, when part of Charlestown, 1630
(Home of Colonial Governor John Winthrop)
Incorporated a town, 1842
Etablished a city, 1872

Location: Somerville City Hall (near centre of the city), is 2¾ miles northerly from State House, in Boston.
Greatest extent of the City north and south about 4.2 miles.
Greatest extent of the City east and west about 2.1 miles.
Elevation Highland avenue at City Hall 105 feet above mean low water.
Lowest building elevation in the city 13 feet
Highest building elevation in the city 145 feet
Area of City, including land and water, about 4 22 square miles
Land, 2,461.50 acres; water and marsh 238.50 acres
Population, 1920 census, 93,033
Present population estimated 103,860
Entire population on line of pipe and supplied with water

Water works owned by City of Somerville
Construction commenced in 1868
Source of supply: Metropolitan system, taking water of the Nashua river at Clinton, Mass.
Range of pressure on street mains:
Low service 35 to 65 pounds
High service 45 to 100 pounds

Mayor
Hon. Leon M. Conwell

Water Commissioner
Frank E. Merrill

Office of the Water Department
City Hall, Highland Ave, corner School St.

Department Buildings and Yard
Cedar Street, near Broadway

ADMINISTRATION OF WATER WORKS VESTED AS FOLLOWS

1868 — 1871

SOMERVILLE MYSTIC WATER COMMITTEE (5)

Acts 1868; Chap. 202

1872 — 1890

SOMERVILLE MYSTIC WATER BOARD (5)

Acts 1871; Chap. 182

1891 — 1897

SOMERVILLE MYSTIC WATER BOARD (3)

Acts 1890; Chap. 218

1898 — 1899

BOARD OF WATER COMMISSIONERS (3)

Acts 1898; Chap. 33

1900 —

WATER COMMISSIONER (1)

Acts 1899; Chap. 240

REPORT OF THE WATER COMMISSIONER

Office of the Water Commissioner

January 3, 1930.

To His Honor, the Mayor, and the Board of Aldermen:—

I persent herewith my report for the year ending December 31, 1929, this being the fifty-fifth annual report of the water department and my twenty-ninth as water commissioner:

Revenue and Expenditures

Water bills have been issued as follows:—

Metered: Quarterly Accounts			$215,172 76	
Monthly Accounts			153,118 87	
				$368,291 63
Temporary				2,372 57
				$370,664 20
Amounts abated		457 85		
Carried forward		903 12		1,360 97
Income from sale of water				$369,303 23
Receipts; water service assessments			$5,573 41	
Receipts; labor and materials sold:				
Misc. accounts charged		10,342 37		
Adjustments	$190 68			
Carried forward	191 13	381 81		
			$9,960 56	
				15,533 97
Total income of water works				$384,837 20

This amount was used as follows:—

Under Conrtol of the Water Commissioner

Water Works Maintenance	$95,824 95	
Water Works Extension	30,351 11	
Miscellaneous accounts:		
Maintenance	15,533 97	
		$141,710 03

Not Under Control of the Water Commission

Metropolitan water assessment	$195,150 98	
Maintenance water works buildings	1,605 15	
		196,756 13
		338,466 16
Balance to city treasury		46,371 04
Total		$384,837 20

[illegible]

WATER MAINTENANCE ACCOUNT

[illegible]

WATER WORKS EXTENSION ACCOUNT

[illegible]

Cost of Water Works

[illegible] of water works on December [illegible] represented by the expendi- [illegible] appropriations for water [illegible] the year 1929, on extension [illegible] December 31, 1929 [illegible]

Water Works Income from 1898 and its Distribution

The water income and its distribution from 1898 to 1929, inclusive, is shown in the following table:—

Total water income		$8,257,628 88

Distribution:—

Water Works Account

Water Works Construction, Renewal, Maintenance, Operation and Miscellaneous Accounts	$2,474,429 81	
Water bonds	274,000 00	
Interest	86,575 00	
Metropolitan Water Asessments	3,532,413 73	
Maintenance Water Works Buildings	23,509 09	
		$6,390,927 63

Other Municipal Accounts

Various municipal departments through specific appropriations and general revenue account		$1,866,701 25
		$8,257,628 88

Water Distribution System—Construction

STREET MAINS

Approximate number of feet of street mains in the city, January 1, 1929, (including hydrant branches and blow-offs)		581,385
Feet of street mains laid in 1929	4,463	
Feet of hydrant branches laid in 1929	157	
Feet of blow-off branches laid in 1929	80	
Total feet of pipe laid	4,700	
Feet of pipe removed or replaced	1,569	
Net increase in feet of pipe		3,131
Total approximate feet of pipe in the city		584,516
Total pipe mileage, approximately		110.70

The sizes and lengths laid and discontinued are as follows:

Size	Feet Laid	Feet Discontinued
1"	0	309
1½"	0	0
2"	0	1,045
4"	310	17
6"	1,432	28
8"	85	12
10"	0	0
12"	866	118
14"	32	40
16"	1,975	0

The pipes constructed and replaced during the year are as follows:—

	Size	Feet Laid	Feet Discontinued	Size
Bartlett Street	8″	8	8	6″
Beckwith Circle	4″	108	108	2″
Bradford Avenue	6″	170	170	2″
Broadway Terrace	8″	73		
Broadway Terrace	6″	74		
Cedar Street, H. S.	16″	1865		
Cedar Street H. S.	14″	12	20	14″
Cedar Street, L. S.	12″	8	8	12″
Cedar Street, L. S.	14″	20	20	14″
Cedar Street, L. S.	16″	110	110	12″
Cedar Street Place	4″	89	102	1″
Cedar Street Place	6″	13		
Cottage Circle	4″	69	69	2″
Elm Court	6″	106	106	2″
Endicott Avenue	6″	4		
Endicott Avenue	12″	270		
Fairmount Avenue	4″	36	36	2″
Gibbens Street	6″	12		
Hooker Avenue	12″	159		
Hudson Street	8″	4	4	8″
Kensington Avenue	12″	415		
Olive Square	6″	159	159	2″
Park Place	6″	357	300	2″
			57	1″
Thorpe Street	6″	35		
Victoria Street	12″	12		
Victoria Street	6″	89	97	2″
Villa Avenue	6″	34		
Vine Court	6″	150	150	1″
Woodstock Street	12″	2	2	8″
		4,,463	1,526	
Hydrant Branch	6″	157	6	8″
Hydrant Branch			20	6″
Hydrant Branch			7	4″
Blow-offs	4″	8	10	4″
Blow-offs	6″	72		
		4,700	1,569	

Hydrants, Gates, Etc.

Number of fire hydrants in city January 1 1929		1,280	
Number set during the year	20		
Number removed during the year	9		
Net increase in number of hydrants		11	
Total number of public fire hydrants			1,291
Number of private fire hydrants, January 1, 1929		80	
Total number of private fire hydrants receiving their supply from the city mains			80
Number of gates in the city January 1, 1929			2,343
Number set during the year for streets	16		
Number of section gates set	8		
Number set on hydrant branches	22		
Number set on blow-off branches	6		
		52	
Number of street gates removed	2		
Number of section gates removed	0		
Number of street sprinkled gates removed	0		
Number of hydrant branch gates removed	1		
Number of blow-off gates removed	1		
		4	
Net increase in number of gates			48
Total number of gates in city			2,391
Number of check-valves in city January 1, 1929		9	
Number added during the year		0	
Total number of check-valves			9
Number of blow-offs in city January 1, 1929		199	
Number added during the year		5	
Total number of blow-offs			204
Number of waterposts in city January 1, 1929		61	
Number removed during the year		0	
Total number of waterposts			61
Number of drinking fountains in city January 1, 1929		8	
Number added during the year		0	
Number now in the city			8
Number of car-sprinkler connections January 1, 1929		15	
Number set during year		0	
Number now in the city			15

Water Service Connections

The number of services actually in use in the city on January 1, 1929, was		13,977
The number of new service connections brought into use during the year was....	88	
The number of old service connections restored to use	363	
	451	
The number of service connections shut off during the year for permanent or temporary non-use of water was	433	
Increase in number of services in actual use		18
The total number of services in use on December 31, 1929, was approximately		13,995
These services, under state law, are all required to be metered.		
In addition to the above there are fire supplies for private sprinkler systems, which are not at present required to be metered, to the number of		92
There are also services supplying public properties, to the number of		153
The number of new service connections installed during the year was 74 but not all of these are yet in use, or "alive".		
The number of feet of pipe laid in making these connections was 2,626.		

Size, number and length of services installed in 1929:—

¾"	59	2,063′
1 "	2	88′
1½"	1	17′
2 "	4	134′
4 "	2	12′
6 "	5	254′
10 "	1	58′
	74	2,626′

Number of fire supplies installed during 1929 (Included in above)	3

Location of Fire Supplies

	No.	Size
117 Linwood Street: Whitney Barrel Company, Factory	1	6″
Mystic Avenue: First National Stores, Warehouse	1	6″
154 Cedar Street: White Cross Laundry, Laundry	1	6″

Fire Services in Public Buildings

	No.	Size	Installed
Atherton Street, Carr School	1	6"	1927
Boston Street, Pope School	1	6"	1927
Broadway, Lincoln School	1	6"	1927
Broadway, City Home	1	6"	1916
Cherry Street, Burns School	1	6"	1916
Concord Square, Knapp School	1	6"	1927
Craigie Street, Morse School	1	6"	1927
Cross Street, Edgerly School	1	6"	1927
Evergreen Avenue, Forster School Annex	1	6"	1923
*Gov. Winthrop Road, Charles A. Grimmons School	1	6"	1929
Grove Street, Highland School	1	6"	1927
Highland Avenue, Central High School	1	8"	1916
*Holland Street, Western Junior High School	1	6"	1916
Holland Street, Hodgkins School	1	6"	1928
Jaques Street, Glines School	1	6"	1928
Lowell Street, Bingham School	1	6"	1927
Maple Street, Bennett School	1	6"	1927
*Marshall Street, Northeastern Junior High School	1	6"	1923
Myrtle Street, Prescott School	1	6"	1927
Powder House Blvd., Cutler School	1	6"	1927
School Street, Cummings School	1	6"	1916
School Street, High School (west wing)	1	6"	1928
Sycamore Street, Forster School	1	6"	1927
Willow Avenue, Brown School	1	6"	1928
Total	24		

---

* No sprinklers installed.

Number of Services Supplying Public Property

City Hall	1
Police Station, Bow Street	1
Bath House, Shore Drive	1
City Home, Broadway, 3 (1 shut off)	2
Contagious Hospital	1
Tuberculosis Hospital	1
Water Works	1
Incinerator	1
City Stables, City Road	1
Garbage Plant	1
Sewerage Yard	1
Public Libraries	4
Fire Stations	7
Schools	30
Public Grounds	17
Water Posts	61
Street Sprinklers	15
Drinking Fountains	8
Total	154

Water Meters

Number of water meters in city, January 1, 1929		13,977
Number installed during the year, new	88	
Number reset	363	
	451	
Number removed on account of permanent or temporary discontinuance of water and for substitution of other meters	433	
Net increase in number of operating meters.............		18
Number of motor registers (included in above)........	1	
Total number of meters in service		13,995
Per cent. of services metered		100

Operating Meters December 31, 1929

Size	⅝"	¾"	1"	1½"	2"	3"	4"	6"	12"	
No.	13,476	294	111	27	54	20	8	3	1	13,994
Motor and elevator registers										1
										13,995

The meters installed in 1929 were classed as follows:—

New services	88
Reset	363
Total	451

Meters were removed for the following causes:—

Vacancies and temporary non-use of water	181
Services permanently discontinued	1
Replaced by other meters	251
Total	433

The annual report of 1926 shows the progress of metering services from its beginning in 1898 to December 31, 1926, when the city reached the point of 100% meterage. Subsequent data follows:—

Year ending December 31	Population	Number Services Required by Law to be Metered	Per Cent Metered	Daily Per-Capita Consumption of Water
1927	103,000	13,857	100	78
1928	103,500	13,977	100	81
1929	103,860	13,995	100	83

Summery of Pipes and Fixtures of the Water System

December 31, 1929

Feet of main pipe (approximately)	584,873
Miles of main pipe (approximately)	110.77
Services in use (approximately)	13,995
Services supplying public property	154
Private fire supplies (sprinkler systems)	92
Fire supplies to public buildings	24
Sprinkler systems installed in public buildings	21
Public fire hydrants	1,291
Private fire hydrants	80
Gates	2,391
Check Valves	9
Meters (including 1 motor register)	13,995
Waterposts	61
Car-sprinkler connections	15
Blow-offs	204
Drinking fountains and troughs	8

WATER ASSESSMENTS AND CONSUMPTION

The assessment paid to the Commonwealth by this city as its proportionate part of the cost and operation of the Metropolitan Water Works for the year 1929 was as follows:—

Sinking Fund	$8,226 16
Maintenance	43,639 87
Interest	102,359 58
Maturing Bonds	12,380 67
Brookline Credit	6,079 20
Improvements, etc.	22,465 50
Total payment for 1929	195,150 98

The amount paid by this city since the beginning in 1898 is as follows:—

Sinking Fund	$466,727 67
Maintenance	809,093 81
Interest	2,033,618 15
Maturing Bonds	60,919 98
Miscellaneous	162,054 12
Total payments to date	$3,532,413 73

There has been credited to the city by the Commonwealth as its proportion of the amounts received from entrance fees, water supplied outside the district and water furnished to water companies, the sum of $9,056.10.

The daily consumption of water in Somerville, as recorded by the Venturi-meters, operated by the Metropolitan water works, is shown below by months for the year 1929:—

Months	Gallons per day	Gallons per capita	Months	Gallons per day	Gallons per capita
January	8,780,100	85	July	9,129,700	88
February	8,602,500	83	August	8,676,900	83
March	8,236,400	80	September	8,744,400	84
April	8,186,800	79	October	8,450,400	81
May	8,463,500	82	November	8,147,800	78
June	9,135,500	88	December	8,423,600	81
Year 1929	8,581,600	83			

Total consumption for the year 1929:
High-service 700,379,000 Gals.
Low-service 2,431,901,000 Gals.
Total City 3,132,280,000 Gals.

The following table shows the daily per capita consumption of water in cities and towns in the Metropolitan Water District for the year 1929, as registered by the Metropolitan meters:—

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Arlington	60	59	59	60	65	79	86	70	68	60	59	58	65
Belmont	61	60	61	61	69	84	95	85	80	66	64	61	71
Boston	120	118	112	110	113	118	118	116	117	114	112	115	115
Chelsea	75	74	74	71	71	74	76	75	74	71	70	71	73
Everett	117	118	114	110	114	114	117	120	131	127	110	115	117
Lexington	78	78	67	64	74	89	103	86	77	69	69	62	76
Malden	69	68	67	65	66	71	74	69	73	71	68	65	69
Medford	57	58	59	59	64	71	68	64	63	60	60	61	62
Melrose	68	67	67	66	66	75	81	68	69	68	68	70	69
Milton	53	52	55	54	56	66	65	59	60	56	54	53	57
Nahant	66	70	72	67	83	204	231	185	142	93	68	126	118
Quincy	79	80	79	80	80	86	90	84	85	81	82	81	82
Revere	58	58	57	55	57	67	77	72	65	57	53	56	61
Somerville	85	83	80	79	82	88	88	83	84	81	78	81	83
Stoneham	67	69	68	65	61	68	77	69	68	67	66	70	68
Swampscott	55	55	54	57	71	107	125	108	102	80	60	58	78
Watertown	78	75	76	74	79	84	89	81	81	78	74	72	78
Winthrop	58	57	59	59	61	71	87	82	71	63	60	61	66
Met. Dist.	101	100	96	94	97	103	105	102	102	98	95	98	99

SUMMARY OF STATISTICS

FOR THE YEAR ENDING DECEMBER 31, 1929

In form recommended by the New England Water Works Association

SOMERVILLE WATER WORKS

SOMERVILLE, MIDDLESEX COUNTY, MASS.

General Statistics

Population, census 1920, 93,033; present, estimated 103,860.
Date of construction: Commenced in 1868.
By whom owned: City of Somerville.
Source of supply: Metropolitan water system.
Mode of supply: Water is delivered into the city's mains, under both high and low pressure, by the Metropolitan Water Works.

Statistics of Consumption of Water

Census population, 1920, 93,033.
Population on lines of pipe, Dec. 31, 1929, 103,860.
Population supplied, Dec. 31, 1929, 103,860.
Total consumption for the year, 3,132,280,000 gallons.
Average daily consumption, 8,581,600 gallons.
Gallons per day to each inhabitant, 83.

Statistics Relating to Distributing System, 1929

MAINS

Kind of pipe, cast iron.
Sizes, from 4-inch and under to 20-inch.
Laid 4,700 feet; discontinued 1,569 feet; net extension, 3,131 feet.
Total now in use, 110.70 miles.
Number of hydrants added during year: public, 11; private, 0.
Number of hydrants (public and private) now in use, 1,371.
Number of stop gates added during year, net increase, 48.
Number of stop gates now in use, 2,391.
Number of blow-offs, 204.
Range of pressure on mains, 35 pounds to 100 pounds.

SERVICES

Kind of pipe: Lead; lead-lined wrought iron; cement-lined wrought iron; cast iron; brass.
Sizes, one-half to eight inches.
Laid 2,626 feet.
Number of service connections made, 74.
Services in use, approximately, 13,995.
Number of private fire supplies (sprinkler systems), 92.
Number of meters added, 451; meters and motor registers discontinued, 433; net increase, 18.
Number now in use, 13,995.
Percentage of services metered, 100.
Number of motors and elevator registers added, 0; removed, 0.
Number now in use, 1 (included in number of meters.)

REVENUE

From Water Rates:—		
Temporary supplies for builders and contractors	$2,372 57	
Meter rates	368,291 63	
	$370,664 20	
Abated and forwarded	1,360 97	
Total from consumers		$369,303 23
From other sources:—		
Water service assessments		5,573 41
Labor and materials:		
From private parties		9,960 56
Total		$384,837 20

Disposition of balance: applied to municipal purposes.

Cost of works to date	$1,411,411 53
Bonded debt at date	None

EXPENDITURES

Water Works Maintenance:—		
Operation (Management, Repairs and renewals	$95,824 95	
Special:—		
Miscellaneous accounts	15,533 97	
Total		$111,358 92
Water Works Buildings		1,605 15
Water Works Construction:—		
Mains	$24,416 30	
Services	4,677 79	
Meters	1,257 02	
Total construction		30,351 11
Metropolitan water assessment		195,150 98
Balance		46,371 04
Total		$384,837 20

Construction and Renewal

The outstanding improvement of the water works distribution system during the year was the construction of a 16" high-service line through Cedar Street, feeding the Spring Hill district with a more direct and ample supply of water from the Metropolitan main in Broadway, and giving a better balance to the older feeding and distributing lines.

A special problem was encountered in the crossing of the B. & M. R. R. main line tracks. This was finally solved by the installation of a 16" arc-welded butt-strapped steel pipe above the bridge sidewalk. At the same time a 16" low service main of like material and type of construction was laid over the top of the high-service pipe across the bridge and properly reconnected at both ends with the existing under-ground pipes. The old 12" low-service main was then removed from its longtime location, thus widening the roadway of the bridge about three feet and abolishing a source of danger to automobile traffic passing over the bridge.

Distribution System

The policy of reconstruction has been carried on so far as appropriations would permit. There is need of enlarging and strengthening the high-service system in portions of the city so as to furnish an ample supply of water to all districts on all occasions, especially in view of the requirements of modern fire-fighting engines of so much greater capacity than those of former years and consequent greater draught on the older existing mains.

This need of an abundance of water for fire protection applies equally to the low-service districts in which all our industrial plants are located and which comprise about two-thirds of the city's area. Many of the water mains in this, as well as in the high-service district, are nearly fifty years old and were laid at a time when the demands of the city for water were vastly less than today.

As "Eternal vigilance is the price of liberty" so is constant watchfulness of our water system the price of the health and safety of our city.

Water Income

Due to the increase in water rates of approximately 25%, made by direction of Mayor Leon M. Conwell in 1928 and effective at the beginning of 1929, the water income for the year has shown a large gain, as indicated in the financial tables of this report. Owing, however, to changes in the bookkeeping system of the tax collector's office, whereby the commitment of water income for the last quarter of the year is carried forward to 1930 instead of being credited to the year in which the water was used, the actual earnings for the year are not comparable with the figures given in other years.

Metropolitan Water Assessments

Inasmuch as the decision of the case of Connecticut vs. Massachusetts in the matter of water diversion from the tributaries of the Connecticut River into the Metropolitan water system is still pending in the United States Supreme Court but little money for construction or for diversion damages in the Swift River project has yet been expended, as it was anticipated would be done when the estimated assessments for 1929 were made up by the Metropolitan District Commission, and instead therefore of an assessment of $207,000 as estimated by the Commission, the actual assessment for the year was only about $195,000, being an increase of approximately $11,000 in place of the $23,000 estimated. This, however, is probably but a temporary relief, for if the case is settled favorably to Massachusetts the amount unexpended will naturally be included in some subsequent year, to pay for the reservoir land takings and for delayed construction work.

With grateful acknowledgement of the support given by all with whom my duties have brought me into contact, this report is respectfully submitted.

FRANK E. MERRILL, *Water Commissioner.*

SEP 25 1950